A LITERATURE REVIEW ON THE STATE OF NURSING INFORMATICS IN SOUTH AFRICA

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Abstract

This study examines the state of nursing informatics (NI) development in the South African health-care sector, as well as the difficulties that it faces. The purpose of this review is to determine the role of nursing informatics in South African university curricula, as well as the opportunities and problems that nurses experience while using NI. Despite the opportunities provided by the SA government in the establishment of primary health care (PHC), the introduction of National Health Insurance (NHI), the Millennium Development Goals, and, most recently, the Sustainable Development Goals to promote effective healthcare delivery through adoption and use of nursing informatics in the country, the paper revealed that few universities offer NI as a curriculum option. Using databases such as Ebschost, Science Direct, Scopus, and a slew of others, the literature demonstrates a knowledge gap in nursing informatics, notably in the promotion of evidence-based medicine in the South African healthcare sector. Inadequate financing, a lack of managerial skills, personnel shortages, inadequate record keeping, long wait times, and an ever-increasing patient load for hospital nurses are just some of the difficulties confronting SA healthcare, according to the literature. The study suggested that the government and stakeholders have a role in promoting nursing informatics in South Africa's universities and healthcare systems. The work adds to the body of knowledge in the fields of social informatics and healthcare professions.

Keywords: Nursing informatics, challenges, ICT4D, Social informatics, South Africa

Introduction

Introduction

Information and communication technology is used by nurses to ensure that healthcare is delivered effectively. Using ICT to retain records, make critical medical information available, and prevent medical errors are all examples of how technology may help with effective healthcare delivery (Owolabi, Evans and Ocholla, 2017). The use of informatics in healthcare institutions promotes effective healthcare research as well as good communication between various healthcare providers, including nurses and patients. The potential benefits of using informatics to provide effective healthcare are immense, particularly in rural locations where public health delivery is becoming a major distance (Bhebe, Korpela and Harpe, 2015). For successful adoption and development of nursing informatics, especially in underdeveloped nations. According to the World Health Organization (2005), policymakers must be committed to health, and nurses must have informatics abilities. The South African Health Informatics Association was founded with the goal of promoting the professional use of health informatics in South Africa, particularly nursing informatics, due to the critical role nurses play in providing effective healthcare. The organization's goals include representing South African Health Information on a national and international level, as well as promoting health informatics advancement in the country (American Medical Informatics Association, 2018)

According to the evaluation report from the United Nations Human Development Index of 2014, there has been a significant advancement in the implementation and acceptance of nursing informatics in developed countries.

The report also stated that the majority of Africa's 54 countries have not adopted nursing informatics in their healthcare delivery, with the exception of a few countries such as Algeria, Libya, and Tunisia. In a continent with a population of 10 billion people, the majority of whom live in rural areas where they lack access to good pipe borne water, sanitation, and basic health care, the use of nursing informatics in healthcare delivery is a serious challenge (Bhebe et al 2015).

In this vein, Heeks (2009) asserts that informatics researchers must do research on the numerous nursing informatics technologies available to nurses in order for them to ensure that people have access to healthcare.

According to numerous research findings, most African countries are experiencing infrastructural, resource, and capacity issues in healthcare due to the slow development of technology. Many African countries are not ready to embrace the use of nursing informatics in the provision of effective healthcare delivery, according to Verbete, et al (2013) and Tswane, et al (2013). As a result, the study will conduct an analytical literature review to analyze the state of nursing informatics in South Africa.

South Africa Health Statistics

The National Health Act of 2003 tasked South Africa's Department of Health with formulating policies, coordinating, and overseeing health services. They also laid the foundation for a well-organized and uniform health-care system for all South Africans (United Nation International Children Emergency Fund, 2018). The Department of Health proudly issued a White Paper for a National Health Insurance (NHI) in December 2015, making this goal a reality (Department of Health, 2015). The National Health Insurance (NHI) planned to implement policies that would provide inexpensive, high-quality healthcare to all South Africans, regardless of socioeconomic status. However, the government has yet to achieve the long-awaited universal health coverage. Universal coverage, according to the WHO, can only be said to have been accomplished when the health system takes a people-centered approach to providing high-quality healthcare (Passchier, 2017). du Toit et al. (2018) go on to say that the large imbalance between private and public healthcare services needs to be overcome in order to close the gap in quality healthcare access for both the wealthy and the majority poor.

Statistics According to South Africa (2017), over 7.06 million South Africans were living with HIV in 2017, with a prevalence rate of around 12.6 percent. HIV infection affects around 18% of the adult population (aged 15–49 years). These figures are greater than those provided in 2015. According to Meehan, et al. (2015), 12 percent of the population (6.4 million) had HIV in 2015, with females (14 percent) having the highest prevalence (1 percent). The population of urban regions was 20% higher than that of informal rural areas (13 percent). Furthermore, the majority of HIV cases (56%) are found in the country's poorest areas.

In 2017, male and female life expectancies were expected to be 61.2 percent and 66.7 percent, respectively, while child mortality was 71.3 per 1000 live births. In addition, from 83 percent in 1998 to 96 percent in 2016, the number of deliveries in medical facilities by skilled healthcare personnel increased (Statistics South Africa, 2017). As a result, the South African government aimed to improve pregnant women's access to antenatal care by providing preventive and treatment support. This resulted in a 61.2 percent increase in prenatal visits, with 93 percent of HIV-positive pregnant women receiving antiretroviral therapy, ensuring that their children are born HIV-free and healthy (Statistics South Africa, 2017).

Nursing Informatics Schools in South Africa

Sister Henrietta Stockdale, who built the first nursing school in Kimberly in the 1880s, is credited with establishing nursing education in South Africa. In 1877, the first nursing school opened its doors. Despite the founders' initial preference for the "Department of Education," it was placed under the supervision of the Medical Council (Dlamini & Mashaba, 1988). In 1944, the South African Nursing Council (SANC) was established (Blaauw, Ditlopo and Rispel, 2014). Nursing colleges were required to be associated with university-based nursing departments after a key

policy reform in 1986, putting nursing schools into the higher education system. A new curriculum was also introduced at the same time, which was more thorough and encompassed a four-year period (Breier, Wildschut & Mgqolozana, 2009). According to Owolabi, Mhlongo, and Evans (2016), this condition presently ensures that nursing education at universities and universities of technologies gives a generic bachelor's degree or B. Tech. The schools listed below provide nursing education in South Africa.

University of Kwazulu-Natal

The Kwazulu-Natal College of Nursing (KZNCN) is a public nursing college in KwaZulu-Natal that is operated by the Department of Health KwaZulu-Natal and is certified by the South African Nursing Council. The School of Nursing and Public Health (SONPH) began in 1956, when the University of Natal offered an advanced diploma in nursing education. The first Professional Chair appointment was made to the department in 1971. The nursing school became one of six institutions under the Faculty of Health Sciences when the universities of Durban and Westville merged in 2004.

According to Seebregts et al. (2018), the Department of Tele-Health at the University of KwaZulu-Natal (UKZN) began medical informatics training in South Africa in 2002 through a part-time study leading to a Master's degree in Medical Informatics. Training in biomedical informatics was added to the curriculum in 2004. The informatics program expanded its scope thanks to a grant from the FIC-NIH for the ITMI initiative. The name was eventually changed to Informatics Training for Global Health (ITGH) Program. Medical Informatics (MMedSc), UKZN; MPH (Medical Informatics) at UKZN or UNISA; and MSc or PhD by research in the Department of Computer Science at UKZN are among the qualifications awarded by the program. The Department of Tele-Health, UKZN's School of Computer Science, and UNISA's Department of Health Studies have collaborated on all of these programs (Seebregts et al., 2018). Nursing informatics is not a specialty offered by the nursing school.

University of Pretoria

In February of 2018, the University of Pretoria celebrated its 110th anniversary. It is one of Africa's top universities, focusing primarily on driving South Africa's and Africa's research trends. The University of Pretoria believes that informatics should be combined with other information and information systems disciplines and integrated into an organization. This is done in order for everyone (individual or organization) to benefit from the integration. As a result, in January 2000, the Department of Informatics was established within the Faculty of Engineering, Built Environment, and Information Technology. The School of Information Technology (SIT) distinguishes itself by providing students with an "integrated approach to information technology (IT) with modern laboratories in computer science, informatics, and information science."

Practical work presented in the IT Labs is given a lot of weight. The Informatorium also performs other practical tasks (Department of Informatics Brochure, 2018).

University of South Africa

In 18 3, the University of South Africa (UNISA) was founded. The University of the Cape of Good Hope was its original name. In March of 1918, it was renamed the University of South Africa. At both undergraduate and graduate levels, the Nursing Science program includes NI as an option. Informatics is offered as a subject in the Business and IT programs at the university.

Opportunities for Healthcare Informatics in South Africa (SA)

The field of informatics debates the current state of healthcare. because of technological advancements, healthcare organizations can effectively harness, gather, and analyze data, which has an impact on care delivery, resource management, and teamwork (Barron and Padarath, 2017). Since 1994, South African healthcare has improved, but not without obstacles. It is impossible to overstate the importance of knowledge curations in achieving success and transformation (Barron and Padarath, 2017). Because the burden of diseases, sexually transmitted diseases, violence, alcohol, poor diet, and childhood malnutrition are risk factors fuelling the country's poor state, the search for healthcare re-engineering began. According to the South African Health Review (SAHR), the South African Government (SAG) achieved a number of reforms and goals in 2017, including primary health care (PHC), the introduction of National Health Insurance (NHI), the Millennium Devebpment Goals, a nd, most recently, the Sustainable Development Goals. These created bodies' programs have aided in the consolidation and strengthening of the HCS in South Africa, allowing the country to provide appropriate healthcare to its citizens. The South African health review will help analyze the oportunities healthcare offers to SA since the introduction of informatics to hospitals, complementing the World Health Organization's six building blocks (Barron and Padarath, 2017).

Governance and Leadership.

A robust governance and leadership framework is required to champion great healthcare service. Tensions will be reduced on a national and provincial level as a result of experience and expertise. They will ensure that empowerment processes are sustained and facilitated at all levels of service: national, provincial, local, and district. In 2016, the SAHR reported that South Africa's health system was in poor shape when compared to other developed countries with similar income levds. The failure of government to implement progressive policies such as the primary health center (PHC) approach, which sought to transform and upgrade the health of the populace, has been hampered by leaders' inability to handle the workforce decisively, a lack of functional district

distributive health system management, and government failure (Barron and Padarath, 2017). As a result, the data and information system for human resources (HR) received more attention. Plans were also made to assist district management personnel, with the SAHR serving as an example of local initiatives. The organization of district engagement was also carried out in order to better understand and strengthen community participation. In addition, the government has plans to provide internet connectivity to approximately 173 academic hospitals through the SANReN program. This has necessitated the deployment of high-speed broadband networks throughout the country's teaching hospitals (Owolabi, Mlongo and Evans, 2016). Not to be left out, the National Health Laboratory Service's collaboration with the Department of Health promotes an adequate healthcare system (Department of Science and Technology 2014).

Human Resources

Nurses, who coordinate and provide health services, are one of the largest single groups of healthcare employees. The SAHR investigation revealed a misallocation of human resources between the private and public health care systems. According to the estimate, 93 percent of medical professionals, 89 percent of pharmacists, and 60 percent of doctors worked in the private sector between 1992 and 1993. However, the medical profession accounts for four times the total number of professions in the private sector in the public sector, particularly in the Western Cape. This has made it easier to develop national policies for a new primary health care revolution (PHC). The SAHR has made it a point to include prevalence and good provisory local intervention on the scale-up of word-based outreach teams, community health workers (CHW), and other CHW scale-up activities around the country (Barron and Padarath, 2017).

Though HR remains limited in SA public hospitals, the SAHR notes that good practice and local informants have tenured plans to develop the health information system (HIS) in SA, particularly in the North West province, in 2013/2014. The SAHR has been able to establish a disciplinary committee to monitor the progress of the national health insurance (NHI), the sustainable development goals (SDG), and the priority of health services priority. This argues that, current public health units with multi-disciplinary public medicine professionals might be disseminated across the country as a resource for health-care system development and restructures.

Information

The ultimate purpose of the health information system (HIS) is to provide valuable information to health system stakeholders so that they may make evidence-based healthcare delivery decisions (Barron and Padarath, 2017). The SAHR has long been aware of the development and weaknesses of the SA HIS. This means that data gathered at the provincial and district levels is not properly synthesised and utilized for management decision-making. This has hampered local staff's access to information needed to operate the healthcare system effectively and efficiently. SA intends to

acquire comprehensive quality data repositioning for health outcome monitoring and progress evaluation. In order to strengthen the HIS, the district health management information policy was created. Padarath and English (2014) also look at how South Africa's e-Health Strategy was adopted and implemented. The authors emphasize the importance of the s t r a in achieving a well-functioning, patient-centred, electronic national health information system based on agreed-upon scientific interoperability standards, thereby improving clinical care efficiency, producing management-required indicators, and facilitating patient mobility. The "creation of a unique identifer for each patient, and the installation of patient-based information systems at all healthcare facilities" were mentioned as important future stages.

Although, as described by Wolmarans and colleagues in 2015 on the roll-out of a health patient registration system in 700 primary care clinics in 10 pilot projects, transferring SA to a complex information system was not a simple process. Surprisingly, the difficulties encountered during the implementation of the e-Health system were solved (Padarath & English, 2014). The e-Health program was expected to increase the effectiveness and efficiency of healthcare. The quality and quantity of information provided has improved during the last ten years (Barron and Padarath, 2017). The district health barometer may now give a "wide variety of cross-sectional and longitudinal information on critical health indicators across districts and provinces.

Services

HIV has been the high priority preoccupation of SA. It has been a black cloud overtaking the health system of SA for the past 25 years (Barron and Padarah, 2017). More than 7m people are infected with HIV in SA (Barron and Padarath, 2017). In 2017, demonstrative progress was held to cub the menace and improves SA health expectancy. A huge success was recorded in the treatment and prevention of the disease. HIV testing and counselling was introduced in 2010. Since then, more than 10 million males and females have received medical tests and condoms distribution.

Finance

Without funding, a system will fall apart. Between 1992 and 1993, SAHR stated that R30 billion, or 85 percent of GDP, was spent on health in the country, with 35 percent going to the public sector and 55 percent to the private sector. There was also a financing imbalance between the private and public health sectors, with the commercial sector receiving a larger amount of funds. Nonetheless, these issues have been addressed in recent years as a result of the NHI strategy. The NHI and PHC's impact on health policy in South Africa was proved as part of the SA government's pledge to increase health funding to meet the illness load in the country. Non communicable illnesses, child health, and HIV are among the topics covered. To fulfil the UNAID objective of 90-90-90, the government additionally invests in antiretroviral treatment and preventative interventions. Between 2009 and 2016, there was a significant increase in health funding, as reported by SAHR. Between 1996 and 2017, the financial estimate for health climbed from 35% to 45 percent (Barron and Padarath, 2017).

Informatics and Medication

Medication selection in the private and public sectors in South Africa was reported in the SAHR (2017) review. There has been a "dramatic transition in the previous 16 years as compared to the stock out of TB and ARV drugs seen in public health in 2013," according to the report. For both manufacturers and importers, South Africa has been regarded as the world leader in pricing policies (Barron and Padarath, 2017). In addition, (Wright, O'Mahony, and Cilliers, 2017) used a qualitative approach to identify the existing operational system of healthcare delivery in South Africa. It was determined that the National Department of Health has placed a high priority on the Health Information System in order to improve health care and clinical care support. Furthermore, according to a paper by (Perumah-Pillay and Suleman, 2017) based on an in-depth interview with the national essential medicine list committee (NEMLC) for the selection of essential medicines in South Africa, the NEMLC has undergone remarkable development over time. While the committee's membership has remained largely unchanged over time, the committee's policies and procedures have evolved.

National Health Insurance (NHI)

The National Health Insurance (NHI) of South Africa established a unified healthcare system. This will be accomplished through making affordable and accessible healthcare available to the whole public. It's a mechanism designed to address the current gaps between the private and public sectors (Republic of South Africa Health Department, 2015). Public healthcare is pushed by government funding, yet it comes with a slew of drawbacks. One of the most significant advantages is that all residents have access to free healthcare. Pharmaceuticals, wheelchairs, crutches, toilet seats, and home care visits are all covered. However, because of the high number of underprivileged communities in South Africa, sustainability is a concern; thus, free healthcare may not be available to all individuals who cannot afford to pay medical fees.

Information and Communication Technology Innovations and Infrastructures

The healthcare sector has been altered by innovations such as the electronic TB register, which is used in all provinces, and the electronic patient administration and billing system, which is utilized in Gauteng, the North West, and Mpumalanga (Gray and Varuda, 2014). According to Coleman (2013), having access to and using ICTs will increase medical practitioners' confidence in providing quality healthcare services by stimulating competence and accountability. Adequate investment in the expansion of ICT infrastructure adds to the healthcare sector's economic development and transformation (Republic of South Africa, 2014). The provision of accessible, inexpensive, and dependable ICT technology for the healthcare sector is a crucial goal of the South African government for its economic progress, according to the National eHealth Strategy South Africa (2012). The Republic of South Africa, (2014) adds that this has resulted in increased efforts to ensure adequate broadband connectivity in healthcare services across the country.

Capacity Building in ICTs

South Africa is concentrating on utilizing information and communication technologies to strengthen and promote capacity building in order to improve health services (Department of Health, 2013). As a result, the National Department of Health collaborated with the Department of Education to create a curriculum for medical students on ICT skills Education Labour Relations Council, 2003)'Health informatics' was launched by the University of KwaZulu-Natal and Walter Sisulu University to provide medical personnel with the necessary ICT skills for efficient healthcare delivery (Owolabi, 2016).

South African Government National Research Network (SANReN)

The South African government offered Internet connectivity for teaching hospitals through the SANReN program, which connected "nearly 173 research and educational institutions with high-speed networks" (Department of Science and Technology in Owolabi, 2016).

Policy Framework

Though poorly implemented (Republic of South Africa, 2013), legislative instruments such as the State Information Technology Agency Act 88 of 1998 and the Policy of Free and Open Source Software (Department of Health, 2014) show the government's willingness to ensure ICT-based services for improved healthcare delivery. As a result, it's no surprise that considerable investments have been made in ICT technology (Department of Health, 2012).

Healthcare Challenges in South Africa

Because of near-failed management structures and functions, South African government-owned hospitals have been described as institutions working under excessive pressure (Manyisa, 2016). Insufficiently funded institutions, a lack of management skills, staff shortages, and an ever-increasing patient load have resulted in less-than-ideal working conditions for hospital employees (Scheffler et al. 2016). Montgomery (2016) documents a significant disparity between commercial and public healthcare providers. He claimed that government-run healthcare facilities are disadvantageous to lower-income South Africans who cannot afford private healthcare. Citizens who can afford it can purchase private health insurance to cover treatments at private hospitals, which have better equipment and provide better services with shorter wait times. Less waiting times, better-planned appointments, better equipment, and proper disease control and prevention practices distinguish the private healthcare sector from government-owned facilities, making it more appealing. The following are the roadblocks in the South African public health sector.

High Levels of Unemployment

The rising rate of unemployment in South Africa affects tax revenue, severely limiting the amount that can be spent on public healthcare. The nursing profession was described as "under risk, with diminishing concerns in the profession and a lack of a caring mentality," (Barron and Padarath, 2017 p.4). The need to pay greater attention to human resources should be readdressed.

HIV/AIDS Epidemic and other Diseases

The HIV epidemic in South Africa is a major contributor to the country's economic and health problems. According to Coovadia et al. (2009), the South African health sector has been hit harder than that of other low-income developing countries. In South Africa, HIV/AIDS, tuberculosis, and other poverty-related diseases were the leading causes of decreased national life expectancy. South Africa's health system is made up of a large public sector that is funded by the government. For the nine provincial departments responsible for health spending, public health consumes about 11% of the government's total budget (Jobson, 2015, p.3). Despite this, the management and treatment of HIV and tuberculosis remain a challenge in South Africa (TB). The HIV epidemic has "disproportionately impacted women," owing to their "current disempowered status, subservient position, cultural masculinity's predominance, and extraordinary sex and rape violence." The HIV epidemic has been a major challenge for the public health service, with more than 70% of viral infections occurring in Sub-Saharan Africa and 6.19 million South Africans (11.2 percent of the population of 54.9 million) living with the disease. Life expectancy has dropped significantly among people aged 15 to 49. Women aged 20 to 30 have the highest prevalence, while women under the age of 20 have the highest percentage increase" (Jobson, 2015, p.6). According to the author, 531,965 people died, with 162,445 of those deaths being caused by HIV/AIDS. A neonatal mortality rate of 14 per 1000 live births and a maternal mortality rate of 310 per 100 000 live births are also alarming statistics. Furthermore, each year, over 60 000 children under the age of five die as a result of a lack of access to quality child healthcare services.

Inadequate Funding of ICT in Healthcare

Access to and use of ICTs in healthcare delivery is heavily influenced by financial considerations. However, according to Agbele, Nyongeza, and Adesina (2010), most African countries lack adequate financial capabilities. As a result, insufficient financial resources and a structural reliance on foreign agencies for ICT tool donations limit ICT access and use in many South African hospitals. It is observed that there are disparities in the apportionment of ICTs in healthcare delivery in South African provinces (Department of Health, 2012). (Department of Health, 2012). For example, in 2009, while Gauteng, Limpopo, and KwaZulu-Natal received budget allocations of R188.3 million, R178.6 million, and R105 million, respectively, in nominal terms, the North West, Northern Cape, and Free State received R15 million, R20.4 million, and R32 million,

plan South Africa, 2012). This indicates that funding is insufficient, and investments in ICTs are not properly supervised in healthcare deli v ry.

Inequality in Healthcare Provision

The South African health system is plagued by high levels of disparity whe n it comes to getting quality care by various segments of the population. Private healthcare providers are favoured by those of affluence Of course, the i mpo v e r i hed majority will suffer as a result of this. Acco rding to the writers, inequity has a negative impact on the country (Erasmus et al., 2015).

Poor Information and Communication Technology (ICT) Skills

Professionals' use of ICTs is ha mpe r ed by a lack of ICT literacy, computing techn ology ski l s , and support (Buabeng-Andoh, 2012). Acc o ding to Sukums et al. (2014), computer usage among medical practitioners in developing countries, such as South Africa, is limited due to a lack of computer skills. However, according to Week (201 3), m ed c al doctors and other professionals' use of ICTs is hampered by a lack of ICT skills. Co le man (2013) agrees that, despite the availability of ICT facilities in hospitals, the bandwidth is diff c ult for many m ed c al practitioners to access and use. (Republic of South Africa, 2014; Sharpey-Sciafer and Su le man, 2008). Co le man (2013) conducted a study on computer skills among South African medical doctors. He found that 46 percent of m ed c al doctors lacked computer skills, 42 percent admitted to being averagely skilled in using computers, and only 12 percent claimed to have computer skills. To improve the quality of clinical information available to doctors, they must learn how to retrieve data from computers using appropriate ICT skills. In order to improve the quality of healthcare in South Africa, medical practitioners must be trained to use computers and access information relevant to their practice (Loveday, Smith and Monticeli, 2006).

Public Health Sector and Inadequate Resources

In 2019, the World Economic Forum ranked South Africa as the second most competitive economy in Sub-Saharan Africa. However, as the worldwide lockdown wreaks havoc on the economy and health system, it has just decreased to 16.4%, a 51 percent annual drop (Vanek, 2020; Imraan, 2020; Congressional Research Service, 2020). Despite South Africa's plan to combat the COVID-19 epidemic, Vanek (2020) claims that the number of employers has increased from 2.2 million to 14.1 million, since many enterprises have closed and wages and permanent workers have been lowered. There are also official jobless restrictions in place to help prevent the spread of the coronavirus. As a result, Malakoane et al. (2020) note that the health system in South Africa, like that in Nigeria, is beset by concerns such as fragmentation of health services, employee shortages, cash flow problems, patient s afety risks, malfunctioning communication technology, and inadequate information management. The public health institutions in South Africa, according

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and inadequate information management. The public health institutions in South Africa, according to Mahommed, Mohammed, and El-sol (2017), are not as well prepared as their private counterparts. The authors compared the infrastructure of these public institutions to acceptable standards in low- and middle-income countries. In addition, Maphumulo and Bhengu (2019) raised other concerns about South Africa's healthcare challenges. These are some of them:

Prolonged Waiting Time

Long waiting periods, rushed appointments, antiquated facilities, and poor disease control and prevention techniques" are disadvantages for South Africans who cannot afford private hospitals. Long wait times have been connected to the health sector's insufficiency of health staff. The government's inability to replace retired workers results in a human resource shortage, placing the load of labor to a few hands. "Poor worker retention and mismanagement are global challenges, notably in South Africa," Maphumulo and Bhengu (2019, p.2) write. In comparison to their European counterparts, Africa has less than 1% of professional health workers per 1000 people, compared to ten professional health workers per 1000 people in Europe. This is attributed to the unequal distribution of health staff between the private and public hospitals (Barron and Padarath, 2017, p.4).

Unequal Distribution of Resources

South Africa's total population is estimated to be at 55.5 million people (National Department of Health, 2016). "Around 84 percent of the uninsured people rely on the public health sector, while just 16 percent of the insured rely on medical aid schemes, and they are cared to by the private sector," according to the report (Maphumulo and Bhengu, 2019, p.4). According to the National Department of Health's ten-point strategy, the cost of insured and uninsured persons in South Africa ranges from 20% in private hospitals to 80% in public hospitals (National Department of Health 2014). Invariably, the few insured under the private plan received more over half of the country's entire spending, leaving the remaining 84 percent to fend for themselves (Maphumulo and Bhengu) (2019, p.6). According to Montgomery (2016), there is a significant disparity between the commercial and public healthcare sectors. He claims that government-funded healthcare is inequitable to those who are less fortunate. Only those with sufficient financial means can "pay out of pocket to obtain private insurance for treatment at private hospitals." The South African health system is beset by significant levels of inequality in terms of access to excellent care by various segments of the population. Private healthcare services are preferred by the wealthy. As a result, they had shorter wait times, appointments that were not rushed, "better facilities, and proper disease control and prevention measures" (Jobson, 2015, p.12). Of course, this is to the impoverished majority's detriment. According to the writers, inequality has a negative impact on

the national level (Erasmus et al., 2015). However, due to budgetary commitments to numerous ministries, such as SASSA and children grants, it is recognized that government resources are overstretched. These expenditures may have an impact on needed resources for healthcare.

Adverse Event

In addition to the physical and mental exhaustion of health-care workers, hostility has led to most public-sector hospitals refusing to admit sick patients. This has led to further deterioration of medical conditions and loss of lives (Maphumulo and Bhengu (2019, p.6) (2019, p.6). The authors examine three cases in which adverse events occurred. One case involved a woman who lost her 35-year-old child after being allegedly turned away by staff at a tertiary hospital in KwaZulu-Natal, despite the child's dire circumstances. Due to a series of rejections from various Cape Town hospitals, another grandmother lost her child right on her back. The most recent case involved a teenage girl who gave birth outside of a hospital after being denied access to the facility. These are just a few examples, but this is something that happens on a daily basis in most developing countries. It will only take government intervention to avoid this complication.

Management and Leadership Crisis

South Africa's health outcome reports revealed a total failure in public healthcare distribution, putting the country in a worse position than some low-income countries. Ineffective leadership and administration, a faulty vision, a mediocre philosophy, and faulty goals are the reasons for this. There has been an increase in the number of lawsuits filed as a result of mistakes that could have been avoided, such as the use of insufficient drugs and equipment, as well as poor record-keeping practices. According to Coovadia et al. (2009), apartheid's colonial suppression contributed to the health sector's failing policies and reforms in post-apartheid South Africa. According to the authors, the health system faced numerous challenges following the end of apartheid, which resulted in poor public health policies. Weak leadership, as well as a lack of accountability and transparency, have been observed. "Management's failure to fulfill constitutional mandate in healthcare delivery is caused by lack of accountability, combined with corruption and misconduct among Department of Health officials," according to Siddle (2011, p.6). Due to dysfunctional management structures and weak management functions, South African government-owned hospitals have been described as highly stressed institutions (Manyisa, 2016).

Poor Record-Keeping

According to Kama (2017, p.80), the hospital's "poor needless delays in attending to patients" were caused by the record staff's casual approach toward record keeping. Medical errors occur

when patients' initial information is not accessible for effective follow-up. This can lead to patient misdiagnosis, problems, and even death in the process (Kama, 2017 ,p. 80). Under-resourced institutions, a lack of managerial skills and personnel shortages, and higher patient loads may all be contributing factors to bad working conditions (Crisp & Chen, 2014; Scheffler et al., 2016). The inept management of human resource data and information systems is another noteworthy concern. The South African Health Professions Council, the South African Nursing Council, and the South African Pharmacy Council were unable to locate the records of South African healthcare professionals who had retired, were working part-time, were working in other sectors, or were not working at all. This means that "registers lack trustworhy information on how many people fit into these groups." The registers' incapacity to give documented information on the number of community health workers (CHWs), related health professionals, and traditional healers, among other issues, has been highlighted (Barron and Padarath, 2017, p.4).

Implications

South Africa has had a number of healthcare system successes, particularly in the areas of HIV/AIDS, death, life expectancy, and newborn mortality. Even if they are ineffective, legal instruments are in place. For example, the National Health Act was passed in 2004 and the White Paper on National Health Insurance was released in 2015, both of which intended to address the numerous issues that the South African healthcare industry faced. The National Health Insurance for South Africans is another reaction to the difficulties, with the goal of overcoming inequalities in access to quality healthcare. This intended to improve drug supply, sanitation, infection control and safety, employee attitudes, waiting times, and the security of personnel and patients to provide quality healthcare to the public sector (Republic of South Africa, 2015).

Despite all of these health improvements, the biggest bone to crack is ensuring that the policies are executed efficiently. This can only be accomplished with the help of management and stakeholders, and when correct data on the current state of health service provisions is accessible to aid in the creation of health information policies to satisfy people's healthcare service delivery needs.

Conclusion

The adoption and usage of various information and communication technologies improves the quality of healthcare. As a result, healthcare providers such as nurses must be familiar with and skilled in the use of nursing informatics. Nurses who use nursing informatics have the opportunity to promote evidence-based medicine. Furthermore, the use of nursing informatics in healthcare in South Africa will improve patient care while also reorganizing the healthcare system. In order to

create an enabling environment for nurses and the government in South Africa, it is necessary to improve healthcare delivery and provide effective health care. As a result, the South African Department of Health will need to take the lead in providing the necessary nursing informatics for effective healthcare delivery. Professional nurses play a critical role in tertiary healthcare in South Africa, and the availability and accessibility of nursing informatics resources to them will help them manage patient health issues more effectively and ensure high-quality care. According to the study's literature review, the government must make funds available to purchase healthcare facilities in order for nursing informatics implementation to be accepted effectively. Furthermore, ICT policies that promote the use of technology in various healthcare facilities across the country are urgently needed. Policies must underpin the effective implementation and use of nursing informatics in healthcare delivery. Furthermore, governments must be politically willing to use nursing informatics in South African healthcare, particularly in terms of creating an enabling environment for nurses and other healthcare providers to use technology. This can be accomplished by providing adequate and effective ICT training for nurses.

The study, on the other hand, provides critical information for understanding and developing nursing informatics in the country, as well as a framework for future research and discussion on this critical piece of healthcare knowledge and service. This work's contributions can be evaluated from the perspectives of literature, practice, and policy.

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