

HEALTHCARE SERVICE DELIVERY: A LITERATURE REVIEW

LEO E ARHETE

Department of Engineering and Technology Management, Graduate School of Technology
Management, University of Pretoria
leo.arhete@gmail.com (Corresponding)

LOUWRENCE ERASMUS

Department of Engineering and Technology Management, University of Pretoria &
Defence, Peace, Safety and Security, Council for Scientific and Industrial Research, South
Africa
l.erasmus@ieee.org

Abstract

Despite the end of apartheid decades ago, the South African healthcare system continues to face significant challenges. Although efforts were made in the past to address the crisis, the system is said to be performing below standard. The South African government is in the process of implementing a multibillion rand national health insurance (NHI) programme intended to revamp the entire national health system to among others, ensure affordability and accessibility to healthcare. The purpose of this research study is to review the existing literature on healthcare services to gain more insights on healthcare service delivery from an international perspective, and to find out ways on how healthcare services can be strengthened and more effectively delivered within the South African context with special interest on the implementation of the NHI. A multidisciplinary literature study and analysis was undertaken using the narrative approach. The findings revealed that healthcare systems generally are becoming more multifaceted, and shifting progressively to technology driven process in assertive efforts to ensuring high quality and cost effective healthcare service delivery, with special interest on well-being and preventive orientation. Cracks in human resource and leadership, socioeconomic status, and infrastructure were identified within the South African context as challenges that could impede the implementation of the NHI scheme.

Keywords: Healthcare system, Global healthcare, Healthcare service delivery, National Health Insurance, South Africa.

Introductory Background

The Healthcare industry is one of the largest industries in the service sector (Daggar, Sweeney & Johnson 2007:123; (Lu, shih, Kittipittayakorn & Lian 2013:515), and according to D'souza and Sequeira (2012:28), and Fitzsimmons, Fitzsimmons and Bordoloi (2014:4-5), the provision of healthcare services is a critical aspect of service delivery for any nation's economy to survive and for people therein to prosper. The South African economy has a dual healthcare system which comprises a publicly funded healthcare system that caters for about 80% of the population and a privately funded healthcare system that takes care of about 15% of the South African population (Dolamo & Peparah, 2011:66). Dolamo and Peparah (2011:66) further proclaim that the mines, other independent companies, private general practitioners (GPs) and the South African Military healthcare services cater for the other 5%. According to Ataguba, Benatar, Doherty, Engelbrecht, Heunis, Janse van Rensburg, Kigozi, McIntyre, Pelser, Pretorius,

Redelinghuys, Steyn and Wouters (2012:177), healthcare in South Africa (SA) varies from the most basic primary health care (PHC), which is offered free by the state, to hi-tech and highly specialised healthcare services available in both the public and private healthcare sectors. Although both sectors are said to provide the same services, they do not provide the same quality of services (Human, 2010:33; Yousset *et al.* cited in Chida 2008:1). In their view, Ataguba *et al.* (2012:177-180) believe that there are huge disparities, lingering fragmentation and a lack of national unity between the public and the private healthcare sectors. Coovadia, Jewkes, Barron, Sanders and McIntyre (2009:817) concur that the fragmentation in the health care services that has been a noticeable feature of the history of healthcare services in SA, not only between the public and private sectors, but also within the public healthcare sector. These features can be traced back to the days in South African history where healthcare facilities were racially segregated and both curative and preventive healthcare services were separated by the Public Health Amendment act of 1897 (Coovadia *et al.* 2009:825). The advent of the apartheid regime further engrained segregation and fragmentation of healthcare services, which was primarily centred on race, geographic location and socio-economic status. The post-apartheid healthcare system of a democratic SA was greeted with enormous reform measures to redress the discrimination, disempowerment, underdevelopment and ill-health service delivery that had greatly weakened the healthcare system. Although the government has implemented bold initiatives to strengthen the healthcare system for effective quality service delivery, the two-tiered healthcare system is said to be inequitable and inaccessible to a large portion of South Africans (Human, 2010:33; Marten, McIntyre, Travassos, Shishkin, Longde, Reddy and Vega, 2014:5; Southafrica.info, 2012:Internet). Even though the South African government spends the sum of 13.3 billion dollar on healthcare service annually which is one of the biggest expenditure in the developing world, South African public healthcare sector is consistently rated below average in the world by Health care monitor groups (News24, 2012: Internet; Ramjee & McLeod (2010:186). Recently, the government of SA launched a multibillion rand National Health Insurance (NHI) scheme set to be implemented over a fourteen year period, and intended to ensure that everyone, irrespective of race, gender, geographic location and socio-economic status, have unrestricted access to quality healthcare services, and as well protect them from any financial adversity connected to accessing the healthcare services (Department of Health (DOH) 2011:18; Weeks, 2012a:382-383).

Research problem

A preliminary investigation suggests that healthcare service delivery in SA is problematic and it seems that the decision makers in the healthcare sector are experiencing difficulty in addressing the challenges encountered in practice.

Research objectives

The primary objective of this research study is to gain an understanding on how effective healthcare services can be delivered from a healthcare service delivery framework viewpoint within the international and South African context. In the South African standpoint, specific attention is given to the effectiveness of implementing the NHI project in enhancing healthcare service delivery. In order to achieve the primary objective, the objectives formulated for this study are to: gain an understanding of the major components

of healthcare management framework for providing solutions to the issues relating to healthcare service delivery, determine the role of technology in enhancing healthcare service delivery, identify the major challenges militating against effective healthcare service delivery within the international context, and highlight the actions taken by the key role players in tackling the challenges, identify the major challenges encountered by the key role players in the South African healthcare sector in enabling effective healthcare service delivery to the population, gain an understanding of the roles and the main challenges of the NHI scheme and evaluate the effectiveness of the NHI system in the transformation of healthcare service delivery in SA.

Assumptions and limitations

Literature studies have several inherent limitations and weaknesses such as limited availability of information, the quality of papers examined and perhaps the interpretation of the findings. Dickson; Loannidis; Rosenthal; Sackett; and Scargle cited in World Bank (2009:80), assert that in a review like the one undertaken in this study, the mistrust of publication bias is not new, and while that is imminent, it is imperative to know that its effects tend to be more significant when the available studies conducted in the field under consideration are few and characterized with divergent outcomes. Consequently relevant literature may be omitted and more so, divergence views on the subject matter may not be adequately explored.

Research Methodology

The literature study is centred on the most recent literature accessible in the field of study. The focus comprised of books, journals, academic dissertations, and available literature obtained through the internet from well-thought-of academic, government establishment and various research organizations. The provision of healthcare services is anchored on a number of complex multidisciplinary systems that always interact, and therefore in order to gain an in-depth understanding of the research problems the scope of the literature study cannot be limited to a particular discipline. Main source of Information from the internet are institutions such as the World Bank, WHO, World Economic Forum (WEF), International Business Machine (IBM) Corporation, Department of Health (DOH), Medline, Health Trust, Medical Care Research and Review, Health Affairs, Consumer Powerhouse Ltd and university research facilities and databases.

International Literature Review

A healthcare service delivery framework

In the new healthcare dispensation where innovation is at the frontier, Weeks (2013a: 71) indicates that traditional healthcare paradigms, which seems reactive, have become ineffective in dealing with complex situations that arise when an unexpected event occur. In the new dispensation, the crucial aspect of healthcare services is beyond just the curative services, but encompasses the promotion of healthy lifestyles and prevention services (Weeks, 2013b:2; WEF, 2013:7). In order to achieve this comprehensive orientation

ascribed to the modern-day healthcare, healthcare system is becoming more complex with a number of different systems within the healthcare management framework (Weeks, 2013b:2). The healthcare service delivery framework as diagrammatically presented (see figure 1) shows the different systems whose continuous interaction is pertinent to providing solutions to the issues relating to healthcare service delivery. According to Weeks (2013a:71) the provision of the needed solutions can only be made possible with the “*collective human intelligence*” that develops from the different systems.

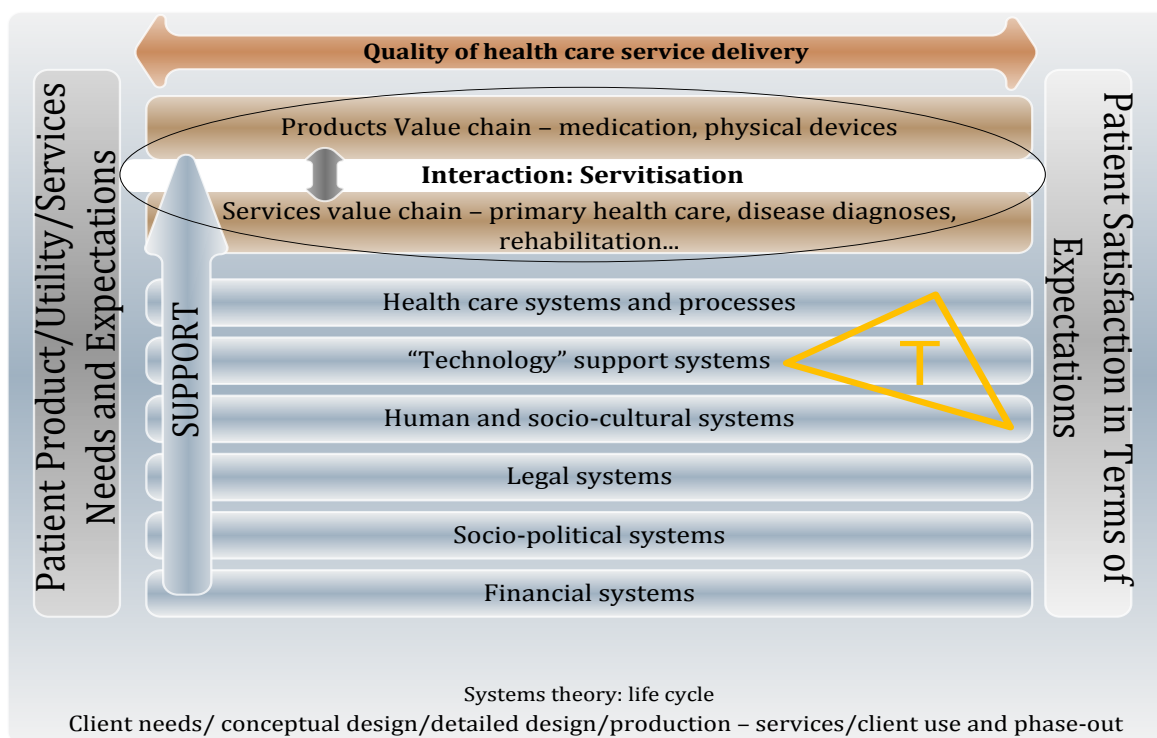


Figure 1: A healthcare service delivery framework

Weeks (2013b:2) claims that the diverse systems that form the healthcare system are progressively forming a unit and therefore it is becoming very complex managing the various interaction and interdependencies taking place between the healthcare service system components (Weeks, 2013b:2, Feachem cited in Weeks, 2013b,2). With this in mind, Weeks (2013b:2), citing Feachem, claims that no country has been able to develop an ideal model for effective management of these systems. A similar claim by Murray and Frenk, cited in Weeks (2013b:2), and the WHO (2014: Internet) indicate that the performance of healthcare systems and the ability to achieve key health intents varies from country to country, however the authors (Murray and Frenk) proclaim that in developing a framework of healthcare system performance, it is pertinent to first define the boundaries of the healthcare systems based on the activities designed to maintain or improve health (Murray & Frenk cited in Weeks, 2013b:2).

The healthcare sector, like other industry sectors, is facing a trend towards servitization, namely the integration of manufacturing and services systems. Comparable to other industry sectors, globalization and its associated secondary effects have its impact on the role players in healthcare, which invariably has resulted in explosion of cost (Mittermeyer, Njuguna, & Alcock, 2011:1212). The authors (Mittermeyer *et al.*, 2011:1212) proclaim that the network of actors within the healthcare sector is becoming more complex as

innovation is speedily evolving, and diagnosis and treatments are also becoming patient-specific. As a result, the need to differentiate, cut down cost to remain competitive and affordable, and ensure that patients' specific needs are met becomes increasingly essential. In the light of this, the integration of products and services, according to Mittermeyer *et al.* (2011:1212) becomes a key "*value proposition*" for ensuring the delivery of cost effective benefits to the patients based on their value expectations (Walters & Jones, 2001:327).

In healthcare services, there are different viewpoints to quality. From the provider's standpoint, the WHO (2004:15) asserts that quality means providing the best possible care available to the patient. From healthcare administrator perspective, quality is seen as providing "*effective care in a cost-conscious environment that may include rationing of health care especially when resources are limited*" (WHO, 2004:15). From a system perspective, quality is achieved when healthcare processes and activities are designed and implemented in order to continuously meet patients' needs and expectations (Al-Assaf cited in the WHO, 2004:15). Therefore understanding patient's expectations is paramount to the provision of quality of service which ultimately has impact on their satisfaction (Dyck cited in Clapper & de Jager, 2004:227).

Technology as a healthcare service support system

According to IBM Corporation (2012:1), there is enormous transformation of the healthcare industry with unprecedented force driven by a fundamental shift in the expectations of the stakeholders: patients, providers, governments, employers and payers (IBM Corporation, 2012:1), and this development intensified with the advent of the 21st century (Fakuyama cited in Dolamo and Peprah, 2011:80). In order to properly accommodate these evolving stakeholders' expectations, improve operations within the healthcare systems, enhance and support collaboration, and build foundation for making decisions that are data-driven, technology has been identified as the enabler by the IBM Corporation (2012:3). The key role played by technology as a support system in healthcare service delivery cannot be overemphasized, as attested to by Yadin and Jahnke cited in Weeks (2012b:173) were the authors maintain that the proper deployment of technology has a tremendous influence on the improvement of the quality of healthcare service delivered, overall cost reduction, and improved access to the services provided by the healthcare system. As a result the dependence of the healthcare system on the concept of technology for effectiveness is progressively gaining ground (Yadin & Jahnke cited in week, 2012b:173). From the literature, it is evident that various terms are used in connection to the concept of technology as a support system within the frontiers of the healthcare industry, such terms as electronic health (e-health), telemedicine, mobile health (m-health), telehealth and healthcare informatics (Dolamo & Peprah, 2011:80-92; Weeks, 2012c:34; WHO, 2011:6). In describing healthcare technology, Erasmus, Poluta and Weeks (2012:27) assert that it is made up of clinical devices. In support Weeks (2012c:34) proclaims that the concept of technology consist of "*the healthcare service delivery system infrastructure*". In the same vein, WHO cited in Erasmus *et al.* (2012:27) concur that healthcare technology comprises the devices, medications, surgical and medical methods, and the associated knowledge that is applied in the prevention, diagnosis, treatment of disease and rehabilitation as well as other support systems that facilitate the provision of care (WHO cited in Erasmus *et al.*, 2012:27).

Human resource or the people dimension in healthcare Technology

Healthcare technology is symbolising three vital components, consisting of context, systems and people. The context here is healthcare and according to Weeks (2012b:177) "it

provides the framework for which the system assume relevance”. This implies that the context determines the system requirements and dictates the kind of skills, knowledge and cultural requirements that will provide the needed outcomes effectively, and in this case, providing effective healthcare services, and healthcare system needs to provide a comprehensive and affordable care to the patients, ranging from preventative (PHC), diagnosis, treatment of disease and rehabilitation.



Figure 2: The technology context in healthcare system

Dolamo and Peprah (2011:173) and Weeks (2012b:179) suggest that when considering the human or people aspect of healthcare service delivery from a technology standpoint, it is pertinent to take into account the knowledge and skills that are needed, the availability of these skills based on the demand, the cultural requirements taking cognizance of the existing culture, and perhaps the change management needed.

According to Dolamo and Peprah (2011:9), “health science depends on the laws that create an atmosphere that is conducive to practice, research and development, and also call on the law to determine the permissible range within which they may operate” (Dolamo & Peprah, 2011:9). Norris (2001:83) asserts that irrespective of a nation’s healthcare system, the government has a vital role to play in the legal aspect of the healthcare system, for example they regulates healthcare by the laws that determine the legal and most often the ethical setting in which healthcare professionals and others function to enable the provision of effective healthcare services (Norris, 2001:83). The government must define laws in consultation with health experts, to deal with data security, ethical standard of practice, licencing of physician, fee payments, liability and malpractice (Norris, 2001:83). Across the developed world, the governments are said to be continually active in healthcare reforms mainly because of the huge cost that the government pay and the percentage of the GDP that healthcare consumes (Dixon, 2011:30). In this direction, countries such as the United states of America and China are reforming the ways they finance their healthcare systems to enable them provide a “universal health coverage” –safe, effective, convenient, equitable and affordable healthcare service (WHO, 2010:7).

Major global healthcare challenges

“Across the globe there have never been more healthcare challenges than there are today” (Deloitte, 2014:1). Atallah, Lo and Yang (2012:2) and KPMG (2014: Internet) affirm that healthcare systems globally are facing unprecedented change. Even though healthcare is primarily organized within national geographies and delivered within a specific locale, healthcare issues are explicitly global (Deloitte, 2014: Internet; KPMG, 2014:1). The major issues identified are ageing population and chronic diseases; cost and quality; access to care; and technology (Adams *et al.*, 2008:3; Atallah *et al.*, 2012:1; Deloitte, 2014:2). Deloitte (2014:3) however avow that the challenges and opportunities stemming from these issues can either be global or market-specific, or both.

Ageing and chronic disease: The United Nations world population report described the current rates of population ageing as unprecedented in the history of human kind (Atallah *et al.*, 2012:3; Economist Intelligent Unit, 2011:6). In support, Deloitte (2014:3); Mohrman, Shani and McCracken (2012:11) and Sustainia (2014: Internet) confirm that the global population age 60 or above has tripled over the last 50 years. Based on the growth rate, the projection of the global population over the next half-century is expected to be more than triple, and to reach about two billion in 2050, and this increase will occur mostly in the developing countries (Deloitte, 2014:3; Mohrman *et al.*, 2012:11). Atallah *et al.* (2012:3) state that the population shift is primarily caused by declining fertility and mortality rates, where the young/old balance is shifting throughout the world. This rapid increase in elderly rates is identified as building a huge strain on most existing healthcare systems with a proportionately slight increase in the nation’s ability to handle the shift (Atallah *et al.*, 2012:3; Deloitte, 2014:3; Mohrman *et al.*, 2012:11). In their submission, Atallah *et al.* (2012:3) and Deloitte (2014:3) attribute this demographic trend to increase and spread of chronic diseases that are considered typical of elderly populations, such as diabetes mellitus, hypertension, heart disease, chronic respiratory diseases, cancer, stroke, and mental disorder among others. This structural shift has placed a greater strain on public healthcare services and at the same time increasing overall spending in all countries, especially for governments that offer welfare such as national healthcare welfare (Mohrman *et al.*, 2012:11). In order to address age-related care and prevent chronic disease, Deloitte (2014:8) asserts that countries around the globe are working individually and in collaboration to innovate in approaches to wellness and prevention, and the World Health Organization has also initiated global awareness campaign about chronic diseases and the intervention against them.

Costs and access: IBM (2012:2) and Sustainia (2014: Internet) assert that the cost of healthcare globally is increasing rapidly, consequently it is believed that the sustainability of healthcare systems worldwide is threatened (Deloitte, 2014:4; IBM 2012:2; Mohrman *et al.*, 2012:9), and the affordability of care is near impossible (Deloitte, 2014:4) . While almost all countries around the globe are continuing in their efforts to improve the quality of healthcare, healthcare organization are struggling to reduce or contain the rising cost which has become a global phenomenon (Adams *et al.*, 2008:1; Atallah *et al.*, 2012:4; Mohrman *et al.*, 2012:27), and even more vulnerable since the 2008 global recession (Mohrman *et al.*, 2012:27). In the light of this, it is indicated that both private and public funding systems on healthcare are economically stressed (Deloitte, 2014:4). Adams *et al.* (2008:1) and Deloitte (2014:4) however proclaim that these higher costs and spending do not necessarily amount to better care results, even in advanced markets, as countries around the globe still face unreliable care quality. For instance, preventable mistakes by

care givers are identified as posing bigger danger to patients across hospitals, and error rates ranging from 2.9 to 45.8 percent were reported in Australia, Canada, Denmark, France, New Zealand, Spain, the United Kingdom, and the United States, among others (Adams *et al.*, 2008:1; Deloitte, 2014:4). In order to manage the cost of healthcare many countries within the globe are introducing cost-containment measures such as prescription drug price cut and control, new physician incentive models, comparative effectiveness, evidence-based medicine, and perhaps servitization in redefining the value proposition of the healthcare systems (Mittermeyer *et al.*, 2011:1212). The use of generic drugs is being encouraged in numerous countries, and care is virtually shifting to more affordable retail clinics and m-health application from the costly traditional healthcare site such as hospitals (Delloitte, 2014:8).

Access to care: As costs and demand for healthcare services rise, access to care is becoming more challenging globally (Adams *et al.*, 2008:1; Heisler, 2013:1). Many healthcare systems have also been reported to have demand versus capacity issues that are extending wait times for care services, and in many cases deny access. Despite the efforts to improve the systems, numerous healthcare systems around the globe are faced with huge challenges in accommodating the high demand for healthcare services as a result of acute workforce shortages, infrastructure limitation, patient locations and cost (Delloitte, 2014:5; Heisler, 2013:3). In its submission, Delloitte (2014:5) proclaim that over one billion population globally lack access to healthcare systems, from amenities to caregivers. Globally, steps have been taken by some countries to address healthcare issues in order to enhance patient access to care. From workforce shortage perspective, Delloitte (2014:8) and Heisler (2013:3) state that in the United States for instance, employment in the healthcare sector has risen drastically, and it is expected to increase to 11.9 percent in 2018. Australia on the other hand has launched a General Practice Training program to increase the number of trainee general practitioners to 600 by 2014, while numerous countries have identified the need to invest in healthcare infrastructure as a priority.

Technology: Although technology is becoming more vital within the healthcare systems, the costs associated with the development of these new technological innovations are very costly, rising than the levels of available funding, and are likely therefore to drive up the overall healthcare costs (Delloitte, 2014:7; Mohrman, *et al.*, 2012:13). In a similar view, The Economist Intelligent Unit (2011:9) concurs that the high costs is associated with the innovative efforts to develop new technologies and treatments by the pharmaceutical, medical devices and biotechnology companies, as well as meeting high regulatory health and safety standards. For instance, the total cost of bringing a new drug to the market in 2006 skyrocketed to \$1.3 billion by a tenfold increase from the cost in 1975. Besides the costs linked to technology in healthcare, it is also proclaimed by Delloitte (2014:7) that technology-enabled healthcare system produces huge volume of clinical and administrative information. Further to the fact that proper interpretation and use of the data generated is imperative, the issues around its availability, integrity, and confidentiality are of concern, and are likely to compound the already challenging issues (Delloitte, 2013:1; Delloitte, 2014:7). In the same vein, Delloitte (2014:7) proclaims that the emerging markets often lack a reliable technology infrastructure. Industry leaders in healthcare sector are taking full advantage of health information technology (HIT) and innovation in healthcare to enhancing the quality of care, reduce the cost of care, and enhance patient outcome (Delloitte, 2014:9). According to Dwivedi (2014: Internet), the Fast evolving medical technology and the availability of diagnostic and therapeutic hi-tech equipment together

with changing practice pattern of doctors has transformed the way healthcare is being delivered today with emphasis on the need for the deployment of robust IT infrastructure.

South Africa Literature Review

South African healthcare system

SA operates a two-tiered healthcare system that comprises a large publicly funded sector that caters for the large majority, and a smaller, yet fast growing privately funded sector that take care of a small segment of the overall population (Dolamo & Peprah 2011:66; Deloitte, 2014:15; Holtz & Elsayy, 2013:75; Naidoo, 2012:149; Southafrica.info, 2012:Internet). Despite the fact that about 80 percent of the South African population uses the public healthcare services, Holtz & Elsayy (2013:75) and Southafrica.info (2012: Internet) lament that the government contributes only 40 percent of its cost. From healthcare expenditure as a proportion of GDP standpoint, Deloitte, (2014:15) states that government expenditure is at 48 percent while the private sector's figure is sitting at 52 percent. Regardless of the slight larger spending Deloitte, (2014:15) confirms that only 17 percent of the South African population have access to private healthcare through medical schemes (which majority of the population cannot afford).

Major healthcare challenges in South Africa

Apart from the above challenges and deficiencies in the system, the following are the major challenges plaguing the South African healthcare system (Ataguba *et al.*, 2012:162; Coovadia *et al.*, 2009:828; Holtz & Elsayy, 2013:76-80):

Persistent and deepening disparities, inequalities, and inequities in healthcare: Decades after the end of Apartheid dispensation, deep and deepening disparities, inequalities, and inequities still prevail in the distribution of resources, in access to healthcare services, and in quality of care delivered and received by the South African population (Ataguba *et al.*, 2012:163; Coovadia *et al.*, 2009:824; Schaay, Sanders, Kruger, & Olver, 2011:4). Ataguba *et al.* (2012:163) further affirm that they are still present between the public and private healthcare sectors, between the socioeconomic classes, between the provinces, between the rural and urban areas, and between race and sex, and these have adversely affected access to healthcare (Schaay *et al.*, 2011:4). Although the authors proclaim that some significant improvements were accomplished by the ANC-led government in the areas of financing and provision of PHC, and policies that made the public sector more race-representative, it is evident that there are more to be done in saving the fast deteriorating South African healthcare system (Ataguba *et al.*, 2012:163; Benater, 2013:154). Benater (2013:154) attribute the causes of these challenges to the continuation of free market policies, inadequate economic advancement, rapid urbanization, migration, corruption and poor management of public services by the ANC-led government.

Predominance of HIV/AIDS, ageing and growing burden of disease: Deloitte (2014:15); Holtz and Elsayy (2013:77), and Schaay *et al.* (2011:4) state that SA is currently experiencing a huge increase in the prevalence of chronic diseases, which according to the authors were historically associated with the developed nations. In the same breadth, Holtz

and Elsway (2013:78) lament that communicable diseases such as sexually transmitted infections (STI) continue to pose problems in adolescents and young adults in SA, where about 10 percent of adults who visit healthcare clinics have concerns about a STI, out of which 4 million people are infected with these diseases yearly (Holtz & Elsway, 2013:78). Benater (2013:154) asserts that SA consists of about 17 percent of the world's population living with the HIV/AIDS, and has the largest antiretroviral treatments programme in the world (Benater, 2013:154). Holtz and Elsway (2013:76) claim that about 60 percent to 70 percent of hospital admissions in SA are HIV/AIDS related cases. According to the authors, this trend is creating a huge burden on the healthcare system, with challenges related to financing, coupled with availability of trained healthcare personnel (Holtz & Elsway, 2013:76). Furthermore, Deloitte (2014:15), and Holtz and Elsway (2013:80) declare that the South African population is fast aging (projected to account for 30 people per 100 population by 2015) as a result of the decline in fertility rate and decreases in life expectancy of HIV/AIDS infected persons.

Inadequate human resource capacity and management: The key human resource issues are shortages, failure to produce adequate numbers of healthcare professionals, maldistribution of existing personnel, and poor skills of many healthcare personnel (Ataguba *et al.*, 2012:170; Coovadia *et al.*, 2009:830; Holtz & Elsway, 2013:77), and these issues have compromised the ability to delivered major healthcare programmes at the levels that the government wants to sustain, including access to healthcare by all (Ataguba *et al.*, 2012:170; Coovadia *et al.*, 2009:830; Schaay *et al.*, 2011:4). From healthcare system management perspective, Coovadia *et al.* (2009:830) identify incompetence in managerial capacity as a major problem, where for instance, inexperienced managers have struggled to handle major challenges associated with transformation, and effective and efficient human resource management.

Public-private divide: disparity, fragmentation, and lack of national unity: Ataguba *et al.* (2012:177) claim that the South African private healthcare sector is robust and resource-rich of international reputation, distinguished for advanced healthcare and high standard of insurance management. Even though the socialist ideology of the ANC-led government contradicts the legacy of the apartheid favoured healthcare system vis-à-vis the private healthcare sector, the failure to unify the healthcare system causing an extension of structural fragmentation, unequal resource distribution, inequitable access to services, and differential quality of care is blamed on the government and the department of health for poor and suboptimal stewardship (Benater, 2013:154; Coovadia *et al.*, 2009:831; Rispel & Setswe cited in Ataguba *et al.*, 2012:179). These disparities have created high costs of care as a challenge in the private healthcare system as attested to by Van der Merwe (2014: Internet) in a report stating that South Africans on medical aids pay more than many developed countries for hi-tech medical procedures. Ataguba *et al.* (2012:180) concur that the South African private healthcare sector is experiencing escalation in costs and have become unaffordable for many medical aids beneficiaries, thus dumping many private sector patients (with cost related shifting) to the already overstretched public healthcare sector (McIntyre & Van den Heever, 2007:82). Although technology is identified as a factor driving the high costs, it is also a fact that healthcare providers in SA tend to focus on serious and expensive medical conditions once they occur rather than emphasizing on the preventive approach which is much cheaper (Schaay *et al.*, 2011:9; Van der Merwe, 2014: Internet; Venturino, 2013:2).

Healthcare reform in South Africa: The NHI scheme

In order to transform public-private divide; improve the distribution of healthcare services and resources; rectify inequalities in access and availability of healthcare services; and ensure universal coverage and quality of care, a number of reforms were initiated in the past by the government of SA. Among such reforms are the reconstruction and development programme (RDP), the public-private partnerships (PPPs), The National Act of 2003, Health Charter and most recently, NHI (Ataguba *et al.*, 2012:180; Venturino, 2013:2). According to Schaay *et al.*, 2011: iii; and Venturino (2013:2), the implementation of the RDP and the national health plan of 1994 have transformed SA in various positive ways, such as less discrimination in the public health sector, accessibility for the underprivileged groups, bridging inter-provincial gaps, and perhaps enabling programmes that targeted acute issues like tuberculosis and HIV/AIDS. However, and as attested to by the Health minister Aaron Motsoaledi (Beukes, 2013: Internet) the reform had little effect, as the playing field remain unequal and inequitable with regards to distribution of human resources, financing and spending, income, access to services, and quality of care (Benatar, 2013:154; Beukes, 2013: Internet; Coovadia *et al.*, 2009:832; Ramjee & McLeod, 2010:184; Schaay *et al.*, 2011: iii; Van Rensburg cited in Venturino, 2013:2; Venturino, 2013:3). In order to revamp the National Health System, the ANC-led-government has yet again embarked on a bold and new direction following the gazetting of its green paper on the policy on NHI (DOH, 2011:18). The implementation of the system is projected to bring about a radical transformation in the aspects of financing, administration, service delivery, healthcare infrastructure, access and affordability, and offer financial risk protection against health related catastrophes (Sekhejane, 2013:2). According to Naidoo (2012:149) and Schaay *et al.* (2011:12), NHI is presented as innovative system of healthcare financing that intend to ensure that the population of SA has access to appropriate, efficient, and quality healthcare services as a result of major transformation in the service delivery structures, and in management and administrative systems (Schaay *et al.*, 2011:12; Southafrica.info, 2012: Internet). From a system perspective, Weeks (2012a:362) describes NHI as a strategic initiative aimed at addressing the inherent systemic healthcare challenges, so as to ensure access to appropriate, efficient, and quality of healthcare services by the South African population. Undoubtable, the NHI initiative has its antecedents in the concept of PHC as promoted by the Alma Ata declaration of 1978 that remains valuable today at a time of transformation in healthcare systems.

The NHI project is expected to be implemented in three phases over a 14 year period and involves a transition from the current fragmented and often non- interactive systems to an integrated all-inclusive healthcare and support services system infrastructure (DOH, 2011:44-51) and the full implementation will cost approximately R336 billion by 2025 (Sekhejane, 2013:4). Considering the scope and the weight of the project, Weeks (2012a:382) claims that the project seems to feature as one of the most ambitious, costly, complex, and multidisciplinary systems re-engineering projects ever embarked on by the DOH. Taking a look at the scheme from a services management perspective, Weeks (2012a:382) therefore suggests that the project requires a fundamental review, analysis and perhaps adaptation of major healthcare delivery and support systems to realize the strategic objective of providing patients with cost effective and quality health care services. In order to achieve its objectives, the NHI scheme is expected to have its funds pooled into a “single-payer” National Health Insurance Fund (NHIF), which are then expected to be used to procure quality healthcare services for the South African population from both the public and private providers that are accredited (Ataguba *et al.*, 2012:474-475; Ataguba &

Akazili, 2010:77; Sekhejane, 2013:2). As indicated by the green paper, NHI will be publicly funded with funding allocation from general tax revenue from the health sector, and smaller share of the funding from a progressively structured payroll tax on incomes of those employed in formal sector, financed jointly by employers and employees (Ataguba & Akazili, 2010:77; Ataguba *et al.*, 2012:474).

Major challenges with the implementation of the NHI

Weeks (2012c:35) identifies a major constraint in the areas of connectivity, access and bandwidth for effective e-Health system, which is a major factor that will enable the success of the NHI scheme. This is attested to by the DOH (2012:5) that “the ICT and HIS within the health system is not meeting the requirements to support the business processes of the health system thus rendering the healthcare system incapable of adequately producing data and information for management and for monitoring and evaluating the performance of the national health system”. Weeks (2012c:35) laments that the various provincial and district health care facilities are widely dispersed -without proper integration into the national internet network, and this will impact negatively on the system’s ability to provide patients with quality of care, and integrated service, and thus raises the issues of interoperability and national standard (Weeks, 2012c:35). Although various health care ICT system exist in the private sector, Weeks (2012c:35) affirms that they are mainly interconnected to medical aids systems from a financial system approach.

Another supply side challenge on the healthcare system posing constraint on the implementation of the NHI is human resource. Even though reforms create an entitlement to a broad range of services, Marten *et al.*, (2014:5) avow that delivery of such services will not be possible without additional staff. This is attested to by the director of Econex, Nicola Theron in a report that in the face of potentially unlimited demand, the NHI system would need 10,000 additional general practitioners, and between 7,000 to 17,000 additional specialists relative to what is currently available (Dolamo & Peprah, 2011:76; Ramjee & McLeod, 2010:187). Weeks (2012c:35) identifies human resources (trained and well-experienced) as vital elements of consideration in designing, implementing and managing an integrated healthcare system like the one needed for the NHI implementation, but they are in short supply in all categories of the healthcare profession (DOH cited in Weeks, 2012c:35), including the ICT profession (Weeks, 2012c:35). In the same breadth, Sekhejane (2013:3) reveals that most community and public hospitals, mainly in the rural and semi-urban areas, are staffed with unskilled personnel, and those with high level of negligent attitude.

Apart from infrastructure and management issues, Ramjee and McLeod (2010:188), Sekhejane (2013:3) and Southafrica.info (2012: Internet) identify lack of strict regulation of the sector as a major issue that could make the scheme inaccessible to the majority of the South African population. Furthermore, Sekhejane (2013:3) states that there is lack of public awareness of the principles and implementation of the NHI scheme, and therefore predicts a public outcry, similar to that on e-tolling, when the implementation commences.

Main findings

Answer to research question 1

From a healthcare service delivery framework perspective, the literature study indicates very important components consisting of needs and expectations of the patients and their satisfaction in terms of their expectations, products and services value chains, the desired quality of care, and the support systems consisting of healthcare systems and processes, technology support systems, human and sociocultural systems, legal systems, socio-political systems and the financial systems. The literature review indicates that the components are multidisciplinary in nature, and the relationships, the interactions, and the interdependencies of the various components are paramount to attaining cost-effective, accessible and high quality healthcare service.

Answer to research question 2

In order to adequately accommodate the fundamental shift in the expectations of the stakeholders in the healthcare industry, technology is being used as an enabler to improve operations within the healthcare system, enhance and support collaboration, and improve decision making process that are driven by data. The analysis further revealed that the appropriate deployment of technology within the healthcare frontier has a huge influence on the overall quality of healthcare service provision, costs reduction, and improve access to the service delivered. The appropriate deployment of technology in this context implies the use of the correct clinical devices, medications, medical and surgical methods, with the requisite people and skills within the healthcare system (prevention, diagnosis, treatment of disease, and rehabilitation). It is only when the technology is deployed appropriately that the desired outcomes in terms of high quality, overall cost reduction, and improved access can be achieved.

Answer to research question 3

Firstly, the literature indicates that ageing and chronic diseases are on the increase, where people of 60 years and older are becoming more in number globally compared to the younger generation because of decline in fertility and mortality rate. This trend is causing an increase and spread of chronic diseases that are associated with ageing, such as heart disease, diabetes, cancer, stroke, respiratory disease among others. The literature indicates that this development is driving high demand for healthcare services and increase in global spending. In order to deal with these challenges, the literature reveals that countries within the globe have started working together and investing in innovations that will ensure wellness and encourage preventive orientation to make healthier choices in order to prevent sicknesses or adverse conditions as against curative approaches. Campaigns have also been initiated worldwide to sensitize people on the ways to prevent the spread of chronic diseases. Secondly, Cost and quality: The high cost of healthcare is found to be a global issue preventing majority of the population adequate access to care. High cost are attributed to innovative and highly expensive technological services and associated drugs that are also in high demand, chronic and infectious diseases that are associated with long-term care, overuse of medical services that are not necessarily required. Human errors and

hospital irregularities were indicated to have negative effects on the overall quality and costs. The literature reveals that measures such as servitization, evidence based medicine, comparative effectiveness, prescription drug price cuts, and physician incentive models are being used to increase the quality of care and also cut down overall costs. Thirdly, Access to care: The literature indicates that there is high demand for healthcare services globally, but the capacity in the areas of infrastructure, medication, and healthcare professionals to accommodate the high demand is insufficient worldwide. In order to address the issue of access to care, the stakeholders are engaging in the development and training of healthcare professionals and incentives models to ensure performance and motivation. Fourthly, Technology: The literature study reveals that the investment costs associated with the development of technological innovation in healthcare are very costly, and becoming unaffordable. Although the innovative efforts are hailed in the literature for transforming the way the stakeholders in the healthcare industry interact in the prevention, diagnostic, treatment of disease and rehabilitation, the literature also indicates that the innovation is also likely to increase the overall healthcare costs, and also capable of exposing patients and healthcare providers to risk associated with integrity and confidentiality of clinical and administrative information if not properly managed and controlled. Issues around availability in the areas of connectivity, bandwidth, and personnel are also revealed to be huge challenges in the healthcare systems globally, especially in the emerging countries. The literature study reveals that the use of technology in healthcare service delivery is actually bringing about costs reduction and improving the overall quality of care, thereby enhancing the quality of life and even extending. Robust IT infrastructure with adequate management and security measures are being built to ensure availability, and assure confidentiality and integrity.

Answer to research question 4

Firstly, the literature reveals that disparities, inequities, and inequalities are still prevalent between the public and private healthcare sectors, socioeconomic classes, the provinces, the urban and rural areas, and between sex and race, in the distribution of resources, and quality of healthcare delivered. These features have negatively impacted on the overall access to healthcare. However, the major causes of the prevalence of these features in the system were found to be corruption and poor management of the public services and free market policies. Secondly, the literature review indicates that the increasing number of both communicable and non-communicable diseases in SA is creating a huge burden on the healthcare system. For instance, it was found that SA has the highest number of people living with HIV/AIDS in the world, and contributing 17% of the world population living with the disease. It was also found that SA has the largest antiretroviral treatment in the world, causing enormous financial strain and distorting effects on the overall healthcare system. The population was also found to be ageing fast, and it was found that the ageing population is also contributing to the increase in chronic and degenerating diseases. Thirdly, the literature indicates that there are serious human resource and management issues in SA, ranging from shortage of healthcare professionals, maldistribution of the available personnel, and poor skills of many healthcare personnel, inexperience in leadership, lack of training and support, inadequate supervision, and incompetent management staff. It was found that these issues are negatively impacting on the ability of the healthcare system to produce the desired outcome, including access to basic healthcare. Fourthly, the literature study reveals a huge disparity, unequal resource distribution, inequitable access and structural fragmentation between the public and private healthcare

sectors. For instance, it was found that the private sector is sophisticated and well financed, and the public sector is lacking basic amenities and poorly resourced. Access to the dual system is unequal. Also, it was revealed that medical aids costs and the costs of healthcare services in the South African private healthcare sector is one of the highest in the world, denying most of the population adequate access to the services, including the medical aids beneficiaries. In the same vein, it was found that private healthcare sector in SA are more focused on curative approach to healthcare instead of the preventative approach which is the cheapest and better approach.

Answer to research question 5

The roles of the NHI as indicated in the literature is to ensure that every South African population is offered financial risk protection against any health related catastrophes, so that everyone irrespective of their employment status have access to quality healthcare services, ensure social solidarity through the creation of a single fund for all, procure services on behalf of the entire population in order to control the escalating cost of healthcare services, and strengthen the public healthcare sector to improve performance. Even though the NHI system seems vital in the formation of an equitable healthcare system, the literature study however reveals some major challenges that might impede the successful implementation. It was revealed that the ANC-led government lacks a robust governance and accountability mechanism, and consequently it is believed that the single payer NHIF will fail the scheme. Issues of connectivity, network access, and bandwidth are some of the major constraint indicated in the literature that are confronting the e-health implementation, and consequently might delay the implementation of the NHI scheme. It was also found that healthcare facilities of the various provinces and districts are not properly integrated into the national network system, which implies that e-health implementation is impeded, and as a result it will delay the NHI implementation. The literature study reveals that the NHI scheme requires additional staff (skilled) to enable the successful implementation, but they are short in supply. It was however found that most of the personnel currently in the public hospitals, mostly in the rural areas are unskilled, and the infrastructures of most of the public hospitals are in bad shapes. In evaluating the effectiveness of the NHI, it was revealed that the initiative is in line with global trend on universal coverage, and international accord on desirable health system reforms, and therefore it is capable of transforming the overall national healthcare system of SA. However, It was revealed that corruption, wastes, inefficient utilization of resources and others excesses in a healthcare system could increase the overall costs, undermine access to care, and cause a detrimental effects on quality. It was also found that inadequate transportation system, waiting time, language barrier, and lack of diversity in healthcare providers could deny adequate access to healthcare. In the same breadth, Venturino (2013:3) states that the socioeconomic status of a given population plays a significant role in their healthcare seeking behaviour, especially in seeking PHC, which implies that adequate access to care, can be impeded by a person's socioeconomic status. Confirmed by a study conducted in the United Kingdom, it was revealed that respondents from poor socioeconomic background (mostly black and women) were less likely to seek for immediate health care attention than respondents from wealthy socioeconomic background (mostly white) (Adamson *et al.* cited Venturino, 2013:3).

Conclusions and recommendations

An important conclusion derived from the literature study is that healthcare systems generally are becoming more multifaceted, and shifting progressively to technology driven process in assertive efforts to ensure high quality and cost effective healthcare service delivery, with special interest on wellbeing and preventive orientation. The technology aspect of healthcare system is highly clinched on the people element, forming the vital hub to effective healthcare service delivery. The challenges faced by the stakeholders in healthcare industry seems to be universal issues, however the approaches and the nature of the systems deployed to finding solutions to these challenges are of significant importance to attaining the desired outcomes. There is no doubt that the intent of the NHI scheme could prove to be a sustainable method for revamping the overall national health system of SA, to among others ensure that the population have accessible and affordable healthcare system. However, the study indicates that the system currently deployed to implement the scheme is plugged with issues that could result in its failure. Therefore to ensure the successful implementation of the NHI scheme, the following recommendations are pertinent:

- The government will need to reconsider the causes of the lingering socioeconomic inequalities in the country and eradicate them, in form of ensuring total equity in terms of employment and benefits, and subsidizing education for the less privileged. The root cause of the racial stigma that brings about these inequalities must be eliminated to ensure proper integration.
- The government will need to reconsider the current challenges with the implementation of the e-health strategy. The e-health initiative is an enabler for the successful implementation of the NHI, therefore adequate funds should be made available, and appropriate governance structure be instituted to oversee the roll-out of an effective e-health systems.
- The government will need to engage in a massive training, skills development and deployment of healthcare professionals to ensure that the issues around shortage are properly resolved. This will take into account the inclusion of doctors' incentives to improve performance, efficiency, and motivation.
- The government will need to reconsider the issues around inefficiencies in leadership, corruption, inequalities within the provinces and districts, and the deteriorating state of infrastructure in public hospitals. There should be a total overhaul of the management structure of public sector to accommodate expertise and enhance good governance.

It is however recommended that further research should be undertaken to determine how best the culture of South African healthcare institutions can be realigned so as to support the proposed NHI scheme deemed necessary for effective healthcare service delivery, taking into account the role of technology in the attainment and sustainability of the projected outcomes of the NHI scheme.

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