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Abstract

Purpose – This paper aims to critically analyze the empirical literature on health and human development in high-, middle- and low-income countries to develop a sustainable model for investing in human health. The model is critical in building a comprehensive health-care system that fosters the stakeholders' financial stability, economic growth and high-quality education for the local community.

Design/methodology/approach – A comprehensive literature review was carried out on health, human development and sustainable health investment. After thoroughly examining theoretical frameworks underlying the strategies of successful human health systems, a summary of empirical articles is created. Summaries provided in this paper represent relevant health-care strategies for Kenya.

Findings – Based on the empirical review of literature, a Nexus Health Care model focusing on human development, social and cultural development, economic development and environmental development in high-, middle- and low-income countries is proposed. The goal of this model is to enhance sustainable development where wealth creation is accompanied with environmental uplifting and protection of social and material well-being.

Research limitations/implications – This paper is limited to a comprehensive literature review presenting empirical evidence of human development and sustainability.

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Originality/value – Kenya like other developing nations aspires to contribute significantly in improving health through development of health products but the approaches used have been limiting. In most cases, the use of Western theories, lack of empowering the community and dependence on donor support have hindered the country from achieving comprehensive health and human development. This papers seeks to develop a model for health-care investment and provide strategies, operations and structure of successful health systems and human development for a developing country, such as Kenya.

Keywords Kenya, Sustainable development, Human development, Social development, Human health development, Sustainable health, Human health improvement

Paper type Literature review

Introduction

With a vision to establish a high-quality health-care capability in Kenya, the model in this paper is established with plans to invest in high-quality human resources and technology, which could help to build clinics and hospitals, and to manufacture medicines, medical devices and health supplies. Such large technological investments in health care have so far been unsuccessful in Kenya. One reason for this failure is that investments often disregard the interdependencies that exist between technology, human characteristics and the socioeconomic environment. The interdependencies that exist have a great impact on health-care delivery and health status of a population. With this realization, there is a need for a holistic health framework with the goal of promoting health and human development in Kenya. The holistic framework proposed is applicable to health organizations with a goal to promote health and human development.

Background of the problem

In contemporary African society, the meanings and views of the concepts of health and human development have been defined differently. To develop a functional health system that fosters development in low-income country such as Kenya, it is important to discuss the two concepts; health and development and how these are perceived across in the African context (Nafukho, 2013). To start with, Todaro (1992) defined development as a multidimensional process involving the reorganization and reorientation of entire economic and social systems. In the same spirit, Bryant and White (1982) described development as increasing the capacity of people to influence their future. On the basis of the above mentioned definitions, it is apparent that development has socioeconomic, cultural, environmental, human, political and psychological dimensions.

The World Health Organization (WHO) has defined health as a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity (Huber *et al.*, 2011). This definition has been criticized for underrating the role of human capacity to cope autonomously with life's physical, emotional and social challenges, and to function with fulfillment. Huber *et al.* (2011) redefined the meaning of health by emphasizing the ability to adopt and to self-manage. In this new definition of health, emphasis is on the importance of stakeholders reflecting many cultures and future scientific and technological advances. Bircher and Kuruvilla (2014) looked at health as a state of well-being emergent from interactions between individuals' potentials, life demands, social and environmental determinants. The two concepts, health and development, are intertwined. A nation's development depends on the health of its population, similarly, the health of the people depends on the development level of a nation. Therefore, any investment in low- to middle-income countries must factor in the aspect of improving health.

While development is sometimes inevitable, to be successful, nations and organizations should implement intentional development (Cowen and Shenton, 1996). Intentional

development involves deliberate and planned interventions by individuals, institutions and developmental agencies that address important issues in their society. The United Nations Development Program (UNDP) defines intentional human development as:

> [. . .] a process of enlarging the range of people's choice by increasing their opportunities for education, healthcare, income and employment and covering the full range of human choices from a sound physical environment to economic and political systems (United Nations, 1992, p. 2).

Human development should aim to ensure access to quality health care, education facilities, opportunities to earn income and access to social welfare services (United Nations, 2003). The Human Development Report (HDR) (2011) further noted that development paradigm endeavors create an environment of self-respect, empowerment and a sense of belonging for a community (United Nations, 2011). This allows communities to participate in political, economic and social opportunities to develop their full potential to lead productive and creative lives in accordance with their needs, values and interest, which is critical for innovation companies to ensure that the people of Kenya, a low- to middle-income setting, are able to willingly choose to engage in the human development process. Without the voluntary participation of the people, human development will not be possible, or successful. Apart from the development of education and people, Kenya's peoples, communities and cities face dire financial burdens. In the 1980s and 1990s, the World Bank and the International Monetary Fund prescribed structural adjustments programs (SAPs) as one of the ways to ensure economic recovery in Africa (World Bank, 1994). SAPs led to devaluation of currency, and reduced government spending in social service sectors, such as education and health (Mkandawire and Soludo, 2004). SAPs also led to liberalization and privatization of government enterprises. SAPs led to increased taxation and interest rates, the introduction of cost-sharing schemes, user fees, cost-recovery measures and wage restraints (Kayizzi-Mugerwa *et al.*, 1998). The implementation of SAPs in Africa did not result in economic recovery. There have been a number of suggested paths, including Nyerere's Ujamaa and self-reliance model to Africa's recovery. More recently, we have the New Partnerships for Africa's Development. While these approaches have been formulated and implemented, the African continent remains economically underdeveloped.

In most African countries, development policies and programs have been largely informed by the modernization theory (Arat, 1988). The modernization theory is supported by the import substitution policies and reliance on foreign aid. However, because of unimpressive performance of these development strategies, neoliberal trade theory seeks to bring about human development in sub-Saharan Africa through trade, deregulation of capital markets and less state involvement in socioeconomic affairs (Lemke, 2001). This differs from the past, when many countries in Africa relied on aid from foreign countries (Moyo, 2009). Trade liberalization is a process of systematically reducing and eliminating tariff and non-tariff barriers between countries as trading partners. The liberalization policies aim at creating a level playing field on which Kenyan and other African economies and organizations can fairly compete. Its main foundation is the economic theory of the invisible hand of the free market enterprise and the notion that unrestrained markets will lead to efficiency in the production and distribution of goods and services between African countries and the rest of the world (Nafukho, 2013). Trade liberalization is based on the neo-liberal idea that successful development can only be achieved by adopting the policy of openness to global capital and competitive forces, and closer integration with the global economy (Moyo, 2009). While this sounds quite plausible in theory, in practice it has also been proved elusive. Trade liberalization advocates for the opening up of national economies to global market forces and limited government intervention in the management of the local

economies. This is successful when there is fairness in international trade between developing and developed countries. In the absence of fair trade, Africa remains disadvantaged.

The United Nations (1992) Human Development Programme report questioned why world markets have only benefited the wealthier countries. One reason for this phenomenon is that:

> [. . .] world trade is completely free and open as in financial markets; it generally works to the benefit of the strongest. Developing countries enter the market as unequal partners and leave with unequal rewards (United Nations, 1992, p. 1).

In addition, some countries experience economic disadvantage when market rules are changed to prevent free and open competition, for example, those African countries functioning with competitive advantage, such as in labor-intensive manufacturing or trading in precious minerals. Regarding development, the neoliberal trade theory rests on the idea that immanent development of capitalism can positively change the destiny of communities in low-income countries. The trade theory advocates for the distribution of welfare through the market, as well as advocating for the distribution of wages and enterprise management for profit accumulation (Nafukho, 2013). Capitalism was the dominant view of development in the 1980s, and could be considered the desired form of modernization for many communities. The reality, however, requires some form of intentional development, which includes proactive initiatives aimed at providing public facilities and investments, especially in education and health. Intentional development is guided and works to address the imperfections of free market economy by ensuring equal distribution of resources, and by making essential infrastructure freely available. At the macro level, there is a need for intentional development to help reduce poverty. When discussing the strategies to promote development in Kenya, there is a dichotomy between outside-driven initiatives and internally driven solutions. This paper is focused on the idea that investing in education and health is what will bring true and successful human development to Africa.

Statement of the problem

With increasing globalization coupled with increasing health and epidemiological transitions, international communities and multilateralism have become vibrant and well-coordinated. The effectiveness of these initiatives depends on the effectiveness of regional and international collaborative efforts on health and development issues. There are, however, knowledge gaps on models international and local investors in health care can use to attain a sustainable health care and development. Most research on health innovation organizations is focused on verifying the existing theories. The existing global macroeconomic theory is grounded on data from Western nations (Davidson, 2011) , which does not fit globalization of local conditions in developing countries. Moreover, several theories on investment in health care have been discussed, but no theory adequately explains the workings of transnational organization for human development in the frontier market. Researchers in international development have eked out small gains of knowledge from existing grand theories of human development, rather than exploring new areas grounded in indigenous knowledge systems. Furthermore, research has shown that the absence of relevant theory has caused more than seven decades of work by organizations such the World Bank, the International Finance Corporation, the UNDPs and country-based development agencies to produce little results in terms of human development in frontier market countries (Grenier, 1998) . Since the niche to invest in developing countries has continued to rise, and a lot of data on health and development exist, there is a need for a comprehensive model to guide the process. Razmi *et al.* (2012) investigated the effect of government spending on health and suggested a future study to review and analyze the relationship between health and human development in developing countries, such as Kenya.

This paper reviews health and human development literature in high-, middle- and low-income countries to develop a model that can be applied to developing nations, in particular, Kenya.

The next sections present the research design, followed by the review of related literature. The review of literature discusses the concept of health and development, states strategies to achieve a comprehensive human health development, models used in health and development, and presents the proposed model for investment in health care. Next, we present the discussions and implications of the study.

Method

An integrative literature review was conducted to present the current state of knowledge on health and development, theories used in health development and strategies for achieving a successful health and human development. A computerized search was done in the following databases: PubMed, EBSCO, Business Source Complete, academic search complete, SCOPUS and Google Scholar.

The initial search was restricted to the following primary keywords "human health development" and "human health improvement." Then a number of peer-reviewed journal articles on the topic were identified and reviewed. Further refined searches were performed on the basis of the following secondary keywords as descriptors: "health sustainable development," "social development," "biodiversity," "eHealth strategies," "sustainable health," "environment health care," "global health," "health-care reform," "human development theories," "population health improvement," "health technology," "health-care capacity," "health financing," "ecohealth," "health investment model," "global health," "health-care improvement" and "health governance." Given the multitude of articles written on the topic of human development, it was not only necessary to review the relevant literature on this topic but to also make a decision on inclusion criteria. Our inclusion criteria considered empirical studies on human development and issues related to sustainable health investment. The selected articles represented original scholarship and documents published in the past eight years (2009-2017). It is assumed that the articles published within this period provide the current trend on the theories used in health care and development. Other relevant literature, such as books and book chapters, were also included. The summary of empirical articles included herein is representative of strategies for human health development relevant to developing countries.

Review of related literature

Health and human development

Health and human development are intertwined and these interact to produce a sustainable human development in any given context (Razmi *et al.*, 2012).The relationship between health and human development is not linear but cyclical without any specific starting point (Alin and Marieta, 2011). The assumption behind this relationship is that healthy people contribute to building good human capital, which then contributes to economic development. On the one hand, an economically improved nation empowers its people by increasing their access to affordable fundamental needs, such as food, health-care services and education. On the other hand, economic inability tends to affect health and other fundamental needs, as low income may constrain people's ability to access health care and health-promoting opportunities (Freire and Kajiura, 2011). Advancing on the same idea, Alin and Marieta (2011) tested the bond between the effect of the health system and the effort and the value of human development using correlation analysis and found a strong relationship between health systems and the level of human development. However, the authors found no relationship between the health systems efficiency and human

development. The findings have significant implications for investors in health who focus on effect rather than effort in providing health services.

The main concern for both developed and developing countries has been to improve health and human development (Razmi *et al.*, 2012). However, Gudes *et al.* (2010) examined frameworks for organizing information in a collaborative health planning and noted that this process faces significant challenges resulting from narrow information and absence of framework to guide decision-making. A part from the stated challenges, Kumar (2013) in analysis of health development found that the set development agenda for the twenty-first century is not comprehensive enough to cater for all health issues of poor people and poor nations. Kumar concluded that there is a need to accelerate efforts to succeed in all areas of health. Both Gudes *et al.* (2010) and Kumar (2013) emphasized the need for nations to deal with the fundamental issues of health. Razmi *et al.* (2012) and Freire and Kajiura (2011) advancing on this idea stated the need for countries to prioritize health issues. The author pointed out that investing in health increases human capital through capital health accumulation, which has a direct effect on development.

Overall, the reviewed articles provide a compelling evidence of the existing bilateral relationship between health and human development. Specifically, health improves human development and human development itself increases health. Researchers in this field have further pointed out the need for collaborative approach between several agencies and institutions if nations want to achieve health equality for all people across the world (United Nations, 2012). Others have maintained that there is no one-fit-all solution for health problems. The past studies suggest that each country must prioritize to tackle its own health issues.

Strategies to achieve a comprehensive health and human development

The result of the selected empirical studies suggested several strategies for health investment in developing countries. The findings suggest that there are multiple strategies and can be categorized in various ways, but for this study, the strategies are categorized into four groups. Strategies on human development, economic development, social development and environmental development.

Aday (2005) noted that when investing in health for a healthy nation, policymakers must take into account the fundamental determinants of health and they must reduce health disparities. Fundamental determinants of health include natural resources (environmental resources), human capital (education), material capital (occupation, employment and income) and social and cultural capital (social support and community empowerment). Aday (2005) further pointed out that increasing investments in health care is not an efficient way of improving population health and saw the need to focus on main policy domains that determine health, which include human development, economic development, socioeconomic development, environmental development, community development and sustainable development. Provided below is a discussion on each of the five policy domains.

Human development. Human development refers to investing in the skills and capabilities of individuals, which enable them to act in ways that enhance their contributions to society. UNDP observed that human development goes beyond broadening individuals' choices to ensure that the choices made by individuals do not compromise or restrict future generations. Choices made by humans should ideally lead toward long and healthy lives, allow opportunities for education and allow individuals to live a high quality of life (United Nations, 2015).

In the 2015 HDR for Africa, the sub-Sahara region is ranked third best in the human development index (HDI) growth of 1.08 per cent. Even with this improvement, challenges emanating from poverty, inequalities and environmental effects persist. Consequently, the 2015

HDR has placed emphasis on developing strategies and policies, which create job opportunities, ensure workers well-being and develop targeted actions (United Nations, 2015).

If we consider human development by and for the people, then we can confirm that people both rich and poor, as individuals or groups are the real wealth of nations (Von Wagner *et al.*, 2009). The studies reviewed in this section emphasize the need to empower people to proactively help themselves, either as individuals or groups. For instance, Kobayashi *et al.* (2014), Von Wagner *et al.* (2009) and Ramírez-Luzuriaga *et al.* (2016) pointed out the need for increasing interpersonal interaction with health professionals. Other scholars maintained that the concept of human development is dynamic and its components are interconnected between economic, social environmental and political dimensions, thus, the analysis and strategies to advance human development should take a holistic view (Poverty, 2010). In a holistic view, the argument is that the HDI does not capture the rich content of our human development concept. The focus on economic growth is necessary for enhancing different aspects of human well-being, but is not sufficient as a means to human development. To include all the dynamics of human development, the index measure should be extented to reflect inequalities, human security, empowerment, increased attainment of education, access to health information technology (HIT), improved health and safeguard the environment (United Nations, 2014).

Table I shows the strategies taken from the literature which will improve human development. Each strategy outlines the most important aspects of the literature, and what key findings will allow for successful and healthy human development.

Economic development. Economic Development is mainly concerned with enhancing the efficiency of a national, regional, state or local economy by investing in and introducing businesses to an area. The actions yield multiplier effects by creating new jobs and increasing the wealth and income of target residents (Aday, 2005; Muiya and Kamau, 2013; Mwaura and Pongpanich, 2012). Kim *et al.* (2013) in their analysis of the global health care reached the same conclusion with the above authors. Ki Kana *et al.* stated that economic development is synergistic with the development of health systems and fundamental to the improvement of value in health-care delivery. Advancing on the ideas further, Aday (2005) summarized the prerequisites a health-care investment that would effectively improve population health and reduce disparities should have. These include:

- creating delivery system that directly catalyzes economic development through the mechanisms of ensuring a healthier and more productive population;
- creating employment opportunities that contribute to the formation of a middle class of individuals;
- improving skills and thus incomes;
- increasing local purchasing power for goods, services and equipment, including certain food supplies, support services, maintenance, construction services and other health system inputs; and
- purposeful development of health-care delivery systems in low-income communities that leads to improved infrastructure – i.e. cellular phone towers, internet access, electrification, clean water access and local transportation systems.

Table II outlines the selected empirical studies on strategies for economic development. Just as Table I successfully outlined the most important aspects of the literature for each strategy, Table II emphasizes the aspects vital for economic development in the developing world.

Social development. The review of literature has shown that social development can be accomplished by addressing income and gender inequality (Chen *et al.*, 2015), addressing the

Table I.
Selected empirical studies for strategies on human development

Author	Summary	Relevancy	Theory	Key findings/outcomes
Strategy 1. Use health education programs to create awareness				
Von Wagner *et al.* (2009)	Health literacy has a direct effect on health outcomes Understand the process in which health literacy affects health	Patient–provider interactions Effectiveness of education tailored to community	Health literacy framework and Social cognitive model	Health literacy improves population health and reduces health disparities Reduces risk behavior Improvement in knowledge of diseases Reduces health costs and premature deaths
Kobayashi *et al.* (2014)	Limited health literacy is a barrier to participating in national publicly available cancer screening program	Need for: Interventions in designing of information materials Provision of alternative support Increase interpersonal interaction with health professionals	Multivariable-adjusted logistic regression	Adequate health literacy is linked to greater accuracy of screening, independent of other predictors of screening such as age and coming from higher wealth quintile
Bostock and Steptoe (2012)	Health literacy is the degree to which individuals have the capacity to obtain, process and understand basic health information and services	Need for appropriate design and delivery of health related services for older adults	Longitudinal cohort study	Older adults have difficulties reading and understanding basic health related information Lower literacy is related to high mortality
Strategy 2. Improve community health and nutrition				
Ramírez-Luzuriaga *et al.* (2016)	Poor feeding practices, poor hygiene, and prevalence of communicable diseases are leading causes of chronic malnutrition (micronutrient deficiencies) in children under 5 Many nutrition intervention programs fail because of inadequate implementation	Use of locally available resources to prevent impact of chronic malnutrition and its irreversible consequences Follow-up services for identified cases Regular evaluation programs Need to engage all stakeholders Adequate resources	Behavior changes communication approach	To improve dietary quality in children, food baskets that include fortified complementary foods may be more effective than cash transfers 19% of screened children were underweight and malnourished Community participation (510 volunteers were trained to support the program)

(*continued*)

Table I.

Author	Summary	Relevancy	Theory	Key findings/outcomes
Strategy 3. Attract and retain qualified health professionals				
Bertone and Witter (2015)	Human resources for progress toward universal health coverage Underperformance of health workers Salary of health workers is unclear Kenya has a shortage of approximately 18,000 physicians, with 51% immigration rate	Devise effective incentive packages for health workers Understand factors underlying health workers remuneration Consider both financial and non-financial motivations	Human resources for health	Remuneration is a critical in recruiting, retaining, and motivating workers Remuneration also affects performance of health systems and the progress toward universal health care
Strategy 4. Continuous professional development				
Aluttis *et al.* (2014)	Capacity building is linked to improved performance in health Core domains for public health capacity: resources, organizational structures, workforce, partnerships, leadership and governance, knowledge development and country-specific context	Need for capacity mapping Acknowledge pre-existing capacities	Country-level framework	Capacity building ensures sustainable health improvement, independent of external events
Strategy 5. Build a strong leadership for effective internal and external management				
Kirigia and Kirigia (2011)	Weak governance and leadership in health development explain why the majority of African countries are far from Millennium Development Goals Health leaders and managers at various levels of national health systems are not trained properly WHO health governance domain excludes effective keys to health governance	Use data in estimating health development governance index Training programs reflect development in health systems performance Education programs for medical and public health practitioners should include leadership and governance	A broader health development governance framework	Policymakers can establish sources of weak health governance and develop appropriate interventions

(*continued*)

Table I.

Author	Summary	Relevancy	Theory	Key findings/outcomes
Mikkelsen-Lopez *et al.* (2011)	Vital elements of system governance are strategic vision, participation of all relevant stakeholders, transparency, accountability A comprehensive assessment develops governance interventions to strengthen system performance and improve health as a basic human right	Helps understand how health systems work to govern appropriately Develops indicators to assess governance across the health sector	Health systems framework and systems thinking	Increased investment by donors Improved understanding of management in developing counties Weaknesses in governance are addressed by targeted interventions and policy
Strategy 6. Use of information communication and technologies in provision of health care				
Murray *et al.* (2011)	Information and communication technologies in health care are essential for high quality and affordable health care	Knowledge of barriers and facilitators to successful implementation of e-health initiatives Setting HIT initiatives in line with organization goals	Normalization process theory	HIT initiatives that have a good fit with existing organizational goals, staff skill sets and a positive impact on patient–professional interactions Relationships between professional groups are likely to normalize Improves quality through communication Increased efficiency through reduced duplication of investigations
Christensen and Remler (2009)	Increase in financial support for HIT in health care to lower costs and improve health outcomes High replacement costs and the need for technical compatibility (health-care services, health insurance and labor markets) are barriers to HIT	Setting technical standards for HIT is critical to include all relevant stakeholders, including patient groups Ensure the process of adopting HIT is slow and flexible to allow for as much diversity as possible	Standard-setting approach	Improved outcome and efficiency HIT payment form has a strong influence in health care If interoperable and compatible HIT is adopted, it allows aggregation and integration of data across regions and diseases, medical knowledge is likely to expand

(*continued*)

Table I.

Author	Summary	Relevancy	Theory	Key findings/outcomes
Wickramasinghe and Schaffer (2010)	Health-care reform is a global priority. The USA has identified design, development and implementation of technology solutions as a critical success factor	Need for HIT preparedness for e-health solutions (HIT infrastructure; standardization in policy, protocols and procedures; user access and accessibility; and governance regulations)	Patient centric e-health	Efficiency, decrease costs Enhance quality of care Evidence-based information and clinical data Empowerment of consumers and patients – increases satisfactory patient choice Education keeps abreast with the quality of health care and use of latest medical treatments and preventive protocols Ethical operations Equitable health care
Scott and Mars (2013)	eHealth is a viable solution for developing countries eHealth strategy is essential in achieving the complex goal of aligning health system, health needs of the entity (institution, subnational, region and state) and culture involved by providing evidence-based guidance Absent, inadequate or vague eHealth strategy is a significant barrier to efficient investment in, implementation of sustainable eHealth solutions	Need for a wise investment in eHealth to address the growing expectations, changing demographics and disease patterns, and resource limitations Embrace principles of eHealth development: simplify complex content, use pragmatic approach and spread costs through networking	eHealth strategy Development Framework	Greater efficiency, reduces adverse drug reactions, has positive socioeconomic returns

Table II.
Selected empirical studies for strategies on economic development

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
Strategy 1. Empower stakeholders/communities to actively participate in economic growth				
OECD (2012)	Women's economic empowerment is a prerequisite for sustainable development, pro-poor growth and the achievement of all the MDGs Women's economic empowerment is "smart economics" More equitable access to assets and services – land, water, technology, innovation and credit, banking and financial services – promotes economic growth	Need to integrate all gender-specific perspectives at the design and programming stage Need to reach and enhance opportunities for the poorest women in remote communities Ensure equitable access to assets and services	Holistic approach	Women perform 66% of the world's work, and produce 50% of the food, yet earn only 10% of the income and own 1% of the property Higher female earning and bargaining power translate into greater investment in children's education, health and nutrition, which leads to economic growth Cooperative structure improves both economic and social standing in the household
Strategy 2. Develop a sustainable health financing mechanisms				
Muiya and Kamau (2013)	Kenya's health-care financing system faces several major challenges resulting from poverty, and reduced donor funding Community-based health insurance is an option toward generating additional resources for universal health care	Need for collaborations in resource design and implementation to ensure financing mechanism is synchronized with economic growth for higher social returns on investments Ensure financing mechanism is efficient and equitable both in revenue generation and service delivery Raise awareness of the value of insurance	Leadership training	Increase prepayment from the informal sector and mobilize resources for health care Community-based financing provides social inclusion and financial protection Health financing cannot be dealt separately as it has to do with good governance, economic growth and education

(*continued*)

Table II.

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
Musango *et al.* (2012)	Majority of African population have no access to health services or health insurance The expectation is that universal access to health care is human development and will lead to economic development A focus on financing reforms and actions can improve coverage of health services	Need to explore innovative domestic revenue collection mechanisms to increase expenditure on health Need for donor countries and development partners to invest in health in low-income countries Efficient use of existing resources, greater equity in financing and accessing quality health care	Evidence-based approach	Clear health financing strategy leads to a success of universal health coverage in an efficient, sustainable and publicly accountable manner
Mwaura and Pongpanich (2012)	Country and donor have turned to informal sector insurance mechanisms: community-based health insurance schemes as a way to improve financial protection, mobilize revenues and improve the efficiency of out-of-pocket spending	Need for increased awareness on the benefits of community-based insurance schemes	Data collection	Community-based health insurance schemes improve equity and access of the poor to essential health care: through low weekly premiums More women are insured (62%) than men (38%) Individuals from lower-income quartile are more likely to enroll in the community- based insurance schemes Pooling of risk reduces financial barriers to health care

(*continued*)

Table II.

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
Strategy 3. Establish cooperative societies for sustainable development				
Wanyama (2014)	In an era of privatization and reduction of public health services, member-owned, not-for-profit health cooperatives constitute an alternative to private insurers Cooperatives contribute to both economic, social and environmental sustainability Cooperatives provide financial services, including affordable micro-health and life insurance to individuals living in rural areas	Need to recognize the role of cooperatives in achieving sustainable development Establish education and training programs geared toward empowering cooperative members and the community	Sustainable business model	Cooperatives contribute to economic growth by creating employment (Kenya – 250,000 jobs) and income Stimulate performance and competitiveness, as members are also the beneficiaries Cooperatives ensure healthy lives by providing infrastructure for health-care services, financing health care and providing home-based health-care services in rural areas otherwise not available Pharmacy cooperatives give members access to genuine and affordable medicines

issue of inconsistent migration patterns and inadequate protection of human rights (Burns *et al.*, 2002), which have great impact on people's health (United Nations, 2012). In the same vein, Musango *et al.* (2012) pointed out the need to reinforce social health protection through establishing sustainable health financing mechanisms. In sum, the reviewed literature offers evidence that social aspect of development plays a vital role in overall health and human development. In particular, it reduces the overreliance on direct pocket payments.

Community development. The reviewed studies have provided evidence for the community development because of its focus on change and empowering individuals and groups through activities (Aday, 2005; Franke and Guidero, 2012). Although community development does not solve specific problems faced by the community (Franke and Guidero, 2012; Meijboom *et al.*, 2010), it builds confidence in community members to address problems at large. For community development initiatives to become self-sustainable, the formation process should seek resources from all possible avenues (grants, contracts and loans) and ensure that there are reliable means of maintaining funding to realize the desired objectives. The community development initiatives should ensure that proper human resource organization is available, and that these actively engage members in pragmatic activities. In addition, initiatives should have strong and extensive networks and political capacities, in addition to being flexible and resilient (United Nations, 2014).

Table III outlines empirical studies from the literature that explain the aspects of social development.

Environmental development. Environmental factors have a substantial influence on human health, life expectancy and socioeconomic development. The issues in environmental health are constantly changing. The WHO 2015 Report estimates that between 2030 and 2050, climate change will cause approximately 250,000 deaths per year; these deaths would be as a result of malnutrition, malaria, diarrhea and heat stress. The costs of health are estimated to range from US$2 to US$4bn per year by 2030. A concern is that most developing nations with weak health infrastructure will not be able to cope without assistance from developed nations (Kumar *et al.*, 2013). Asakura *et al.* (2015) in their analysis of the relationship between health systems and human development found that although global risks related to environment and climate change are intensifying, little is known about the health consequences of environmental dilapidation, especially in developing countries. The authors suggested the need for increased awareness of the effects of environmental threats on health and human development. The authors maintained that reducing disease burden caused by environmental factors could result in improved health. An ecohealth approach is proposed – a concept of health that takes into account the contents of the wider eco-system. The approach aims at attaining sustainable health so that communities experience decent livelihoods, and pursue their lives with purpose (Asakura *et al.*, 2015). Ecohealth involves collaborative research by engaging community residents to explore the practical solutions for the specific problems they face. These suggestions by Asakura *et al.* are similar to the WHO 2015 tactics on climate change and health: to create partnerships that would ensure health is represented in the environmental agenda, to increase awareness of the threats of environmental pollution and climate change, to develop a research agenda that focuses on the environmental impact on health and to help countries build capacity to respond to environmental impacts that reduce susceptibility to health.

Health-care waste also presents a serious hazard to the environment. Biomedical wastes comprise unsafe microbes, which can affect hospital patients, health workers, waste handlers and the general public (Hossain *et al.*, 2011). Also, improper management of waste leads to contamination of air, water and soil, and in turn depletion of natural and financial resources (Hossain *et al.*, 2011; Kumar *et al.*, 2013). It is estimated that low-income

Table III.
Selected empirical studies for strategies on social development

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
Strategy 1.Collaborating with health-care professionals and manufacturers				
Burns *et al.* (2002)	The fragmented health industry results in free hospital systems composed of autonomous units Health-care products are ordered by workers on the front line of health-care delivery Technological investments are in patient care rather than information systems and infrastructure Procurement is based on outdated legacy systems, with little direct connectivity with manufacturers	Health-care professionals and manufacturers need to work together to form beneficial strategic alliances Management and coordination of chain from raw material suppliers to end consumers Able to establishing a portfolio approach for providers and customers with proper infrastructure to support the relationship	Health-care value chain	Optimizing firm's overall activities to increase performance Benefit for highly competitive chains developed for all firms
Strategy 2. Align health delivery with the local context; cultural sensitive				
Chen *et al.* (2015)	A culturally sensitive, personalized intervention sustains patients' involvement in their own health and health care	Improve population health and reduce racial and ethnic disparities Engage patients in their treatment Recognizes the relevance of community culture in health	Patient-centered, multilevel activation and empowerment framework	Help build patient-provider partnership through shared decision-making
Strategy 3. Ensure accessible and affordable quality health-care services				
Greater Cincinnati Foundation (2013)	Many low- and middle-income countries' health is a challenge especially in households with limited resources The high cost of medical bills for uninsured allow many families to go without doctor's care or prescription medication because of other essential needs; food, clothing and shelter	Invest in capacity building for organizations working to improve health-care delivery Advance policies related to health and wellness	Theory of change	Increased access to the medical home Healthier lifestyle, and improved social and emotional well-being

(*continued*)

Table III.

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
Chuma *et al.* (2012)	Universal health coverage in Kenya is still an important policy question Kenyan health sector is inequitable as benefits are not distributed by need	Structuring health system to be accessible, affordable, available and acceptable	Household survey	Health benefits were distributed by ability to pay and not on need for care The private not-for-profit sector was pro-poor, public sector equally served both poor and rich, whereas the private-for-profit sector remained pro-rich Primary health-care services were pro-poor
Strategy 4.Build constructive engagement with community stakeholders				
Franke and Guidero (2012)	Organizations struggle to engage stakeholders Constructive engagement with stakeholders brings the best insight to the challenges in the subject/project to address Community buy-in concept depends on how familiar the implementing agency is with local context, the potential obstacles and the challenge of project planning and implementation	Empower stakeholders through training and workshops to better identify and prioritize their needs and to develop strategies Center stakeholder engagement on network building, trust, and fostering shared values Engage all stakeholders	IRES	Reduces redundancy in project efficiency in the use of time and skills, and fosters a positive work environment Sustainable relationships
Network for Business Sustainability (2012)	Organizations are responsible for social and environmental impacts Expectations are met through stakeholder engagement	Need for community investment and involvement Community integration in joint learning and management of projects		Improves organization's decision-making, legitimacy and competitiveness Transformation of the community

(*continued*)

Table III.

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
Strategy 5.Collaborating with local hospitals, national and international health organizations				
Meijboom *et al.* (2010)	Multidisciplinary collaboration in health care is complicated but indispensable Appropriate information technology should support continuous communication within partner organizations	Care coordination between partner organizations Importance of policy in coordinated services	Supply chain management	Improves information gathering and processing
Syed *et al.* (2012)	Combined developing country learning processes have potential to generate effective solutions for global health systems	Need for planning to realize full potential of international cooperation Blending global knowledge with on-the-ground innovations from developing countries for the future international cooperation and benefits accrued therefrom	Partnership-based approach	Improved service delivery with a mechanism to reduce cultural, social, financial and gender-related barriers Better information sharing Personal and professional development (in health technology and medication safety) Improved patient-provider relationships Greater awareness of the factors impacting health Increase health financing

(*continued*)

Table III.

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
Strategy 6.Continuous health improvement through monitoring and evaluation				
Adindu (2010)	Participatory monitoring and evaluation underpin achievement of health-care goals and objectives	Collaborative evaluation of the project Building capacities and promoting partnership among beneficiaries, implementers and sponsors. Enhances accuracy and reliability of results, and promotes sustainability of health intervention Ensures relevance, progress, efficiency, effectiveness and sustainability after the exit of external stakeholders	Participatory approach	Empowers communities and health workers to make informed decisions on interventions and performance, and to promote collaboration, transparency, accountability and sustainability Enhances acceptability and support for the intervention and evaluation process
Subramanian *et al.* (2011)	The current emphasis on achieving health services targets provides little insight into the actions needed for further growth or sustainability	Use means other than funding to improve health	Theories of change	Learning by acting in ways that engage key stakeholders Use data to address constraints Incorporate results from pilot projects

(*continued*)

Table III.

Author	Summary	Relevant/Applicable	Theory/ Framework	Key findings/outcomes
National Learning Consortium (2013)	Continuous quality improvement has proved successful as a means to achieve the triple aims of health care: improving the experience of patient care, improving population health and reducing per capita cost of health care Ideal for large, complex health-care organizations and practice networks that want to standardize operations across multiple units or practice sites Ideal for achieving small, quick wins and applies lessons learned to new cycles	Have the right data, use the data well, and have enough resources to finish the task Ensure all staff members understand the metrics for success Involve patients, families, providers and care team members in QI activities	Continuous quality improvement (CQI)	Meaningful use of CQI moves health practice from its current state to a more desirable future state of improved patient care, improved population health and reduced cost
Strategy 7. Improve value of health-care delivery				
Kim *et al.* (2013)	Health-care delivery systems are powerful resources for equitable and sustained economic development Effective care delivery helps break the cycle of poverty and disease Health-care delivery systems to improve the value of delivered care to patients, measured regarding patient outcomes achieved	Integrating health systems with economic development to enhance value for resources Integration of prevention and care is needed for related diseases Integrating components of shared delivery infrastructure for economies of scale	Global health-care delivery	Increased productivity because of a healthier population Care delivery promotes equitable economic development The purposeful health-care delivery systems in poor communities are a catalyst for improving infrastructure

countries generate less health-care waste (0.2 kg) than the developed countries (0.5 kg). However, lack of separating hazardous and nonhazardous wastes in low-income countries makes the magnitude of hazardous waste much higher than reported (Hossain *et al.*, 2011).

WHO 2011 states that every year approximately 16 billion injections are administered worldwide, but not all syringes are appropriately disposed of. Furthermore, WHO reports that unsterilized syringes cause 8-16 million cases of hepatitis B, 2.3-4.7 million cases of hepatitis C and 80,000-160,000 cases of HIV every year. This is as a result of lacking awareness about the hazards related to health-care biomedical waste, inadequate training in proper waste management, absent waste management and disposal system, insufficient financial and human resources and failure to adhere with WHO biosafety regulations (Kumar *et al.*, 2013; Hossain *et al.*, 2011). Incinerating of health wastes (a common practice in most developing countries) produces dioxins, furans and other toxic air pollutants that are harmful to human life and the environment. In disposing of clinical waste, using alternative treatment technologies (advanced steam sterilization, microwave treatment, dry heat sterilization, alkaline hydrolysis, biological treatment and plasma gasification) can reduce human exposure to infectious waste, decrease labor and yield proper compliance with WHO regulations (Hossain *et al.*, 2011). Table IV discusses the strategies that will allow for successful environmental development in the developing world.

Sustainable development. Sustainability is crucial to achieve secure long-term human and environmental well-being. According to the 2014 UNDP report, the concept of sustainable development aims at meeting the current development needs without compromising the ability of future generations to respond to their needs. In so doing, it inculcates techniques of reducing implementation costs, dependency and poverty eradication to achieve lasting sustainable benefits. Sustainable development is achieved when economic growth, social development, environmental protection and cultural diversity are emphasized, with the health of the people as the main focus (Aday, 2005; Bircher and Kuruvilla, 2014). On the same note, Buse and Hawkes (2015) suggested that sustainable development can be accomplished, but there is a need for a paradigm shift in the way we address global health. The change should reflect leadership for intersectional coherence and coordination on the structural drivers of health, including social, economic, political and legal considerations. Moreover, the focus should shift from treatment to prevention through locally led, politically smart approaches to a broad agenda, and by identifying the effective means to tackle the economic determinants of ill-health and integrating rights-based approaches. Bircher and Kuruvilla (2014) observed that health goals have not been accomplished because of insufficient coordination across related health, socioeconomic and environmental sectors. Indeed, lack of integration across sectors of strategies, policies and implementation has long been perceived as one of the main pitfalls of previous approaches to sustainable development.

Insufficient limited understanding and accounting of trade-offs and synergies across sectors have resulted in incoherent policies and strategies, adverse impacts of unintended development policies and ultimately in diverging outcomes and trends across broad objectives for sustainable development. As a solution, Bircher and Kuruvilla, Le Blanc and Shakarishvili *et al.* suggested an integrated approach to sustainable development (Bircher and Kuruvilla, 2014; Le Blanc, 2015; Shakarishvili *et al.*, 2011).

Models used in health and development

It is clear from the literature that there is no standard model for framing the relationship between health and human development (Kim *et al.*, 2013; Swanson *et al.*, 2012). A wide

Table IV.
Selected empirical studies for strategies on environmental development

Author	Summary	Relevancy	Theory	Key findings/Outcomes
Strategy 1. Incorporate safety into the health-care operation and services				
Hossain *et al.* (2011)	Improper management of health-care wastes from hospitals, clinics and other health facilities poses public health risks to patients, health workers, waste handlers and communities as well as contamination of air, water and soil, in turn, affecting all forms of life	Emphasis segregation of wastes at point of generation with appropriate collection materials and pre-treat infectious waste before disposing of Train health-care workers and waste handlers Increase awareness and effective control of health-care waste Outsourcing health-care wastes to the private partners or other stakeholders	Review	Emphasize segregation of wastes at the point of generation with appropriate collection materials and pre-treat infectious waste before disposing of Train health-care workers and waste handlers Increase awareness and effective control of health-care waste Outsourcing health-care wastes to the private partners or other stakeholders
Kumar *et al.* (2013)	Negligence of biomedical waste management contributes to environmental pollution, affects human health and depletes natural and financial resources Good knowledge, positive attitude and safe practices of medical staff is vital in managing infectious waste Lack of separating into hazardous or non-hazardous wastes in low-income countries	Need to create awareness among all other stakeholders about the importance of biomedical waste management and related regulations Need for regular training of hospital staff to improve knowledge, attitude, and to comply with health-care standards	Intensive health-care waste management (IHWM) training model	Most hospitals did not practice health-care waste management (HCWM) – segregation, handling, storage, transportation and disposal of waste were below WHO and bio-safety rules Doctors and nurses have better knowledge, positive attitude and good practices for infectious waste management compared to paramedics and sanitary staff IHWM training model improved knowledge and attitudes in regulated medical waste management

range of models has been proposed, such as health systems approach and systems thinking (Mikkelsen-Lopez *et al.*, 2011), social cognitive model (Von Wagner *et al.*, 2009), country-level framework (Aluttis *et al.*, 2014), holistic approach (Kirigia and Kirigia, 2011), standard-setting approach (Christensen and Remler, 2009) and Patient-centered, multilevel activation and empowerment framework (Chen *et al.*, 2015). However, none has received widespread acceptance. This is partly because of the complexity of the issue under discussion and partly because the proposed model/framework lacks fundamental components to guide the investment and improvement of a complex health system. Although it is impossible for a single model to contain all development and health aspects, there is need for new model to address the current challenges.

A proposed model for investment in health care: ingredients for health development in developing countries

On the basis of the relevant literature reviewed, we propose a Nexus model for investment in health in developing countries. The model consists of human development, social development, economic development and environmental development. We argue that every investment in health care in Kenya should focus on the following four aspects: economic development, which leads to prosperity; environmental development aimed at transforming the entire country regardless of physical and natural barriers; and social and human development designed for transforming people and communities where they live and work in. For each aspect, we propose various strategies, as well as why and how these strategies should be addressed. Figure 1 demonstrates the various processes that have been involved with the analysis of health conditions in developing nations.

Note: 169 × 95MM (96 × 96 DPI)

Figure 1.
A Nexus model for investment in life science and health care

Strategies to achieve a comprehensive human health development

Human development

- Use health education programs to create awareness.
- Improve community health and nutrition.
- Attract and retain qualified health professionals.
- Continuous professional development.
- Build strong leadership for effective internal and external management.
- Use of communication and technologies in health-care provision.

Social development

- Collaborate with health-care professionals and manufacturers.
- Align health delivery with the local context; remain culturally sensitive.
- Ensure access to affordable and quality health-care services.
- Build constructive engagement with community stakeholders.
- Collaborate with local hospitals and international health organizations.
- Continuous health improvement through monitoring and evaluation.
- Improve value of health-care delivery.

Economic development

- Empower stakeholders and communities to actively participate in economic growth.
- Develop sustainable health financing mechanisms.
- Establish cooperative societies for sustainable development.
- Create a culture of health through retail clinics and health centers for economic development.

Environmental development

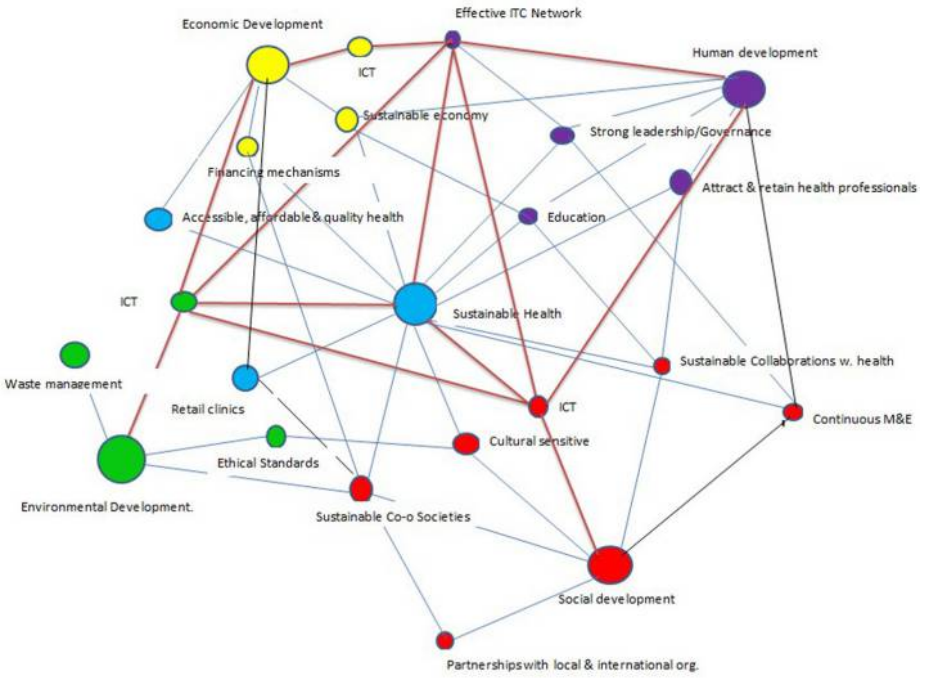
- Incorporate safety standards into the health-care operation and services.
- Comply with global health-care and treatment standards.

Sustainability

In the model, quality health care emerges from interactions between individuals' potentials, economic demands and social and environmental determinants. To achieve sustainable innovations in health-care practice, various strategies suggest that human development, economic, social-economic and environmental development will interact both at individual and organizational level as shown in Figure 2.

Discussion and implications

To realize the vision of becoming a nation with high health-quality services and access to care for all of their citizens, Kenya should notice the need for interdependencies between



Note: 237 × 173mm (96 × 96 DPI)

Figure 2.
A network of strategies for sustainable health care

technology, human characteristics, socioeconomic and environmental aspects. From a review of the literature, we identified the best strategies and operation practices that have been proved effective in strengthening health systems that Kenya may consider. These strategies are along the four dimensions of development (human, social, economic and environmental). These strategies further interact both at individual and organization level to realize sustainable investment in health care.

The review of the literature has shown that the concept of human health development is more complex than it seems. For a nation to provide a comprehensive care to its citizen, it requires a long-term investment in system that can continuously provide high-quality health products, information and services that cover a wide range of diseases.

The study also has significant implications for developing nations that donors and other funding agencies are shifting from mere support to a more collaborative investment. As a result, African countries are challenged to increase their commitment to health and create a conducive environment to both local and international investors, and develop a more sustainable human health and development system. More importantly, the African community should be certain to only invest in health systems that are sensitive and appropriate for its citizens.

Finally, a wide range of models and framework has been proposed to model the relationship between health and human development; however, none has received widespread acceptance. The models/frameworks are not comprehensive enough to guide the investment and improvement of health, thus affecting development. This study proposes the nexus relationship between technology, human characteristics, socioeconomic and

environmental aspects as being critical in achieving a sustainable health-care delivery and economic development. We recognize that though there is no one single model that fits all the developing countries, but any innovative initiative related to health and development should contain the components suggested in the nexus model. We further recommend a future study to examine the practicability of the proposed model to determine the effect of the components in the model affecting health as well as human development.

The study has significant implications for human resource practitioners in improving the overall health outcomes and health-care services, which further have effects on human development. In particular, the finding is that health system efficiency has no relationship with human development. Those in management should shift their focus from effective practices to effort practices by increasing the amount of investment made in health systems. Also, because health and human development are delivered by and for people, a strong understanding of human resource management issues is vital for the success of any health and human development relationship.

Like other studies, this study has limitations; the approach used to review the literature is a limitation of this study as we may have missed a discussion surrounding an important concept or theory related to health, human development and sustainable health.

Conclusion

The review of the literature has revealed that issues of health and human development is complex when examined both at global and national levels. Several models have been proposed but none has received a global acceptance. The proposed model is comprehensive and has potential to guide health and human development resources in Kenya and other developing countries.

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