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Integration of Innovative Technology in Herbal Therapy in Kakamega County, Kenya

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Abstract:

*Co-existence of traditional and modern health care as complements and substitutes is a global phenomenon. Poor modern health care infrastructure made traditional medicine and particularly herbal therapy an indispensable alternative health care option in Kenya. Unfortunately, substandard technology applied in the local infant herbal therapy industry perpetuated preference for foreign herbal products that might be incompatible to the unique Kenyan environment. Consequently, this paper examined the integration of innovative technology in herbal therapy in Kakamega County, Kenya. It specifically sought to establish innovations applied in herbal therapy and determine the relationship between herbal therapy and household welfare. Fifty herbal practitioners were purposively sampled in the County and primary data was collected using a questionnaires. The results showed that hygiene and sanitation (90%), product promotion (70%), gradual processing of herbal materials (48%), domestication of the medicinal plants (44%) and patient centred service (38%) technologies were practiced. A moderate positive Pearson's Correlation coefficient (0.393**, at 2-tailed test) was revealed between herbal therapy and human welfare. It was concluded that innovation was indispensable in sustaining the relevance of herbal therapy in Kenya's health care delivery systems. This improved human healthcare and human welfare as envisaged in Kenya's vision 2030.*

Keywords: Innovative technology, Herbal therapy, Kakamega, Kenya

1. Background

The global social, cultural and historical factors account for the co-existence of a dual health care system comprising traditional and conventional western medicine (Good, 1987 and Lambert et al., 2011). A similar case was reported for Nairobi city by Ngetich (2004). Additionally, Nahin (2009) also revealed that in 2007, adults in the USA spent \$33.9 billion complementary and alternative healthcare. However, Kenya's health care service delivery system is structured in a hierarchical manner ranging from primary to referral healthcare. According to the Republic of Kenya (2014), it comprises six levels including community service (level 1), dispensaries (level 2), health centres (level 3), primary referral facilities (level 4), secondary referral facilities (level 5) and tertiary referral facilities (level 6).

This structure that is skewed against herbal therapy propelled the current study because actualizing the Health Policy and the National Development Agenda enshrined in the Kenya Constitution (Republic of Kenya (2010) was hamper severe a function of financial deficits. Thus, alternative health care given appropriate innovation and technology that is compatible to modern healthcare would change Njagi's (2008) revelation that traditional medicine was regarded as magic in Africa for a long time. Similarly herbal health care was perceived as an unscientific, irrational and illegal practice that capitalized on ignorance of patients and modern health care deficits and costs to exploit patients in Kenya. This negative perception and publicity hampered innovation in herbal therapy and accounts for the current poor service delivery in this vital health sub-sector. This was contrary to Gaggeri's (2009) findings that medicinal chemistry and pharmaceutical technology enhanced the discovery more herbal remedies as source for new lead compounds. Emerging herbal products that are gaining popularity include toothpaste, herbal hair oil are a function of the technological applications in addition to the conventional health products.

The official recognition of traditional medicine in Kenya originated from the WHO's Alma Ata declaration of 1978. Since then, herbal medicine has gradually carved itself a niche in the provision of health care services in Western Kenya (Njoroge & Bussmann 2006). However, this rudimentary sector is prone to multiple challenges, of which, prominently compromise the quality services it offers in Kakamega County, Kenya (Republic of Kenya, 2002). Technological innovations have remained rudimentary and a significant setback in this infant sector, yet it could enhance efficacy of the system hence recovers the lost confidence. This could make herbal therapy to an accessible, cost-effectively health care option for the vulnerable Kenyans. Technology can enhance healthy competition, quality control, and regulation that can eliminate quack from, and restrict spontaneous entry to this volatile health care industry. The *Moringa Oleifera* tree products from Tanzania depict this scenario. Currently, the Kakamega Environmental Education Programme, a community based organisation operating in Kakamega forest, employs modern technology to produce *Mondia Whytei* products and vicks ointment that command both local and foreign market.

2. Statement of the Problem

The co-existence of a dual health care system comprising traditional and modern healthcare is a global phenomenon. Consequently herbal therapy takes a central place in Kenya and particularly Kakamega County that houses Kakamega forest. Unfortunately, herbal therapy is not articulated in the Kenya health policy 2014-2030 (republic of Kenya 2014). Thus, no standardized technology for service provision in this sub-sector exists, probably because herbal practitioners have operationalised their respective innovations tailored along their trades. This has resulted in poor service delivery that erodes people confidence in local herbal products in favour of the imported ones, especially the Chinese oriented and modern health care that are often inaccessible due to cost (expensive) and distance barriers. This puts the health of many Kenyans at stake by exposing them to foreign herbal products that may not address the specific needs of patients given the unique Kenyan environment. At the same time, the rising demand for foreign herbal products siphons considerable foreign exchange out of the country. As a last resort, patients have turned to the local herbal cures (subsistent of commercial) that are ill prepared and in unhygienic conditions thereby endangering their health further. Thus the resultant weak ill-health, low returns on herbal therapy and loss of foreign exchange are significant barriers of Kenya's economic growth and development agenda and attainment of vision 2030 because people comprise the engine of development in terms of labour and market

3. Objectives

This paper examined the integration of innovative technology in herbal therapy in Kakamega County, Kenya. It specifically sought to: (i) establish innovations applied in herbal therapy and (ii) determine the relationship between herbal therapy and household welfare in the county.

4. Justification

Herbal practitioners are the most available, accessible and cost-effective health care providers in Kenya, particularly among rural communities Lambert et al. (2011). Ill equipped-cum-expensive modern health care sector gave them a *de facto* monopoly over the delivery of health care services. It was also evident that herbal therapies were reasonable substitutes, but rarely superior to modern therapies that took a holistic view of the well-being of patients. It was also argued that some herbal practitioners flourished because they were charlatans who consistently duped and took advantage of their poor and ignorant clients. Practically, they used traditional technologies that limited their attainment of full potential in the delivery of health care services as they continued to operate under the informal sector. Thus integrating innovative technologies in this important but otherwise neglected sector boosted her output, stirred fare health care competition and enhanced a cost-effective health care industry and improved human health in Kenya.

5. Study Area

The study was carried out in the expansive Kakamega County that comprise nine sub-Counties located Western Kenya. It is an undulating plateau with an altitude of 1520m to 1680m above sea level a mean annual temperature and rainfall of 18.5°C and 2000mm respectively, hence suitable for agriculture. Rivers Nzoia, Isiukhu and Yala traverse the region and drain into Lake Victoria. Kakamega forest is the most unique vegetation in the region. Some of tree species used for herbal purposes are *Trichilia emetica* (Munyama), *Olea capensis* (Mutukuyu) and *Mondia whytei* Mugombero (Mungatana, 1999). The forest and often polluted drainage systems present unique health challenges to the local communities. Inadequate modern healthcare facilities in the County, diversity of flora and reliable water supply enhance the growth of the herbal therapy industry. The area has a high population size and density that calls for healthcare, thus subsistence and commercial herbal therapy is common in the region, and popular for treating ailments like fever, stomach and respiratory tract infections.

6. The Conceptual Framework

This paper conceptualised innovative technology in herbal therapy in five distinct ways. These included introduction of new: ideas in herbal therapy; method of producing herbal products; market herbal products; source of raw materials herbal products and types of organisational structures herbal healthcare industry. The innovations tended to improve herbal delivery systems, reduced pressure on modern health care hence minimised individual and national healthcare bills. Time and monetary (local and foreign exchange) savings accrued were then invested in various sectors to generate employment opportunism for the healthy population. Finally greater output realised from the investment met the residents' subsistence needs while the surplus sold earned revenue and foreign exchange for the people and nation respectively. The net effect of these innovations was better human welfare which spontaneously triggered further innovations that inevitably stimulate economic growth and development in Kakamega County, Kenya.

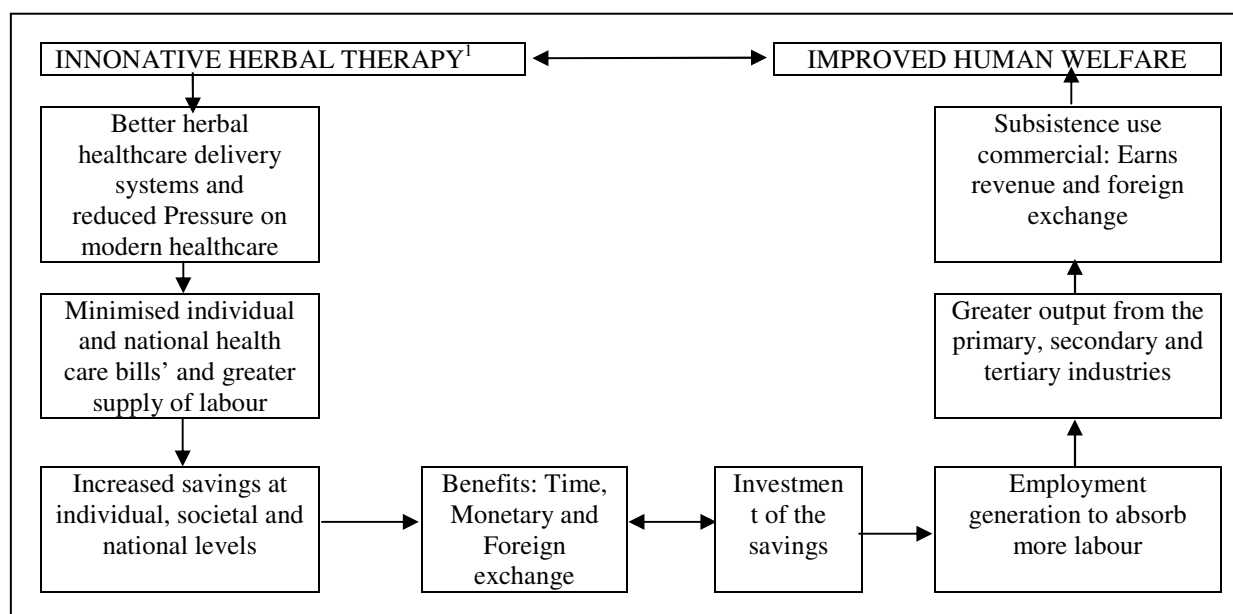


Figure 1: Conceptual framework of the innovative herbal therapy and improved human welfare

Notes: 1. New: ideas; methods; markets; sources of raw materials and industrial organisation in the herbal healthcare delivery systems.

7. Methodology

A sample of 50 herbal practitioners was purposively sampled Kakamega County in January 2013. It was clustered into nine sub-counties also called constituencies. Six herbal practitioners were interviewed in Shinyalu, Lurambi, Ikolomani, Matungu and Malava sub-counties that are in the proximity of Kakamega forest, while five herbal practitioners were purposively sampled from Lugari, Butere, Mumias and Khwisero sub-counties. The village head-men facilitated the interview process by creating rapport between herbal practitioners and the researcher who then explained the nature of the survey and the importance of their participation.

Herbal practitioners studied included herbalists (generally specialists for particular illnesses or conditions), generalists (using herbs as well as other therapies), bone setters, dentists, and traditional birth attendants. Questionnaire, photography and observation schedules were used to identify the common technologies used in herbal therapy systems and the association between herbal therapy and human welfare in the region. Percentages were used to establish the innovations applied in herbal therapy. Thereafter, the Pearson's correlation coefficient was used to establish the relationship between innovative herbal therapy and human welfare. Result were tested at 0.01 and 0.05 levels of significance then imputed on economic growth and development of Kakamega County.

8. Results

The fifty herbal practitioners studied comprised 42% males and 58% females, with the majority 62% aged 45-60 years. All of them had at least attained secondary school education level. Since their services were mainly consumed by the local community, Luhya (56%) was the main instructional language followed by Kiswahili (32%), English (8%) and others (4%). The study revealed innovation was the centrepiece of herbal therapy and concurred with Njoroge & Bussmann (2006) that herbal health care had gradually carved itself a niche in Western Kenya's health delivery system. The most popular innovation reported was improved working environment particularly the hygiene and sanitation (90%). This was demonstrated in the cleanliness maintained by the herbal practitioner who often dressed in uniform (Plate. 1). This minimised secondary infections including diarrhoea and typhoid. The second popular innovation was product promotion (70%) that outlined the salient features of herbal products and where they could be found as displayed on billboards with the trade names including *Dactari wa miti shamba* (herbal practitioner) and *Miti ni dawa* (Trees are medicine) in conformity with the medicinal plants species outlined by Mungatana (1999). Both the innovations improved the quality of herbal service and were prime incentives for patients, which gave herbal therapy a competitive edge over modern health care. Gradual processing of herbal products including drying, boiling, burning and cooling was reported by 48% herbal practitioners probably because the expediting the production process to meet the high demand often compromised their healing power.

Alternatively, domestication of medicinal plants (44%) complemented the wild sources, particularly the unique Kakamega forest that had succumbed to heavy pressure from competing stakeholders as observed by Ramakrishnappa (2002) in India and Muriranga (2013) in Kenya. This would mitigate the effects of ill human health on Kakamega forest as argued by Akala (2009). The practice helped to mitigate the impacts of land use, anthropogenic disturbance, and harvesting on an African medicinal liana as earlier revealed by McGeoch (2008) and largely accounted for the plant biodiversity conservation. Finally, the patient centred service (38%) strategy integrated client driven and gender sensitivity criteria that narrowed down on the specific needs of infants, children, adolescents, men, women, maternity and general human health care in service delivery appealed to a wide range of patients. This revealed that the 1:300 doctor-patient ratio reported, was too high to allow for effective personal attention.

It is therefore argued here that innovation in the herbal therapy would facilitate the harmonisation of traditional and modern health care envisaged by Kimani (1981, 91) and Green and Makhubu, (1984). This would also cultivate professionalism of African medicine (Last and Chavundika, 1971) and would contribute to development of Kenya according to Beck (1971). Unfortunately, herbal practitioners regretted that their innovations hardly attained optimal levels and attributed it to the retarded growth of the herbal healthcare sub-sector in Kakamega County. Consequently, the foreign and particularly Chinese herbal products (Maciocia, 2005) continued to dominate Kenyan Markets and rob the country huge revenues, foreign exchange and employment opportunities.

| Innovation | Real activities | Herbal practitioner |
|---|-----------------------------|---------------------|
| New ideas in herbal therapy | Better hygiene/sanitation | 45 (90%)* |
| New Markets for herbal products | Product/sales promotion | 35 (70%)* |
| New Method of producing herbal products | Gradual processing/Storage | 24 (48%)* |
| New Source of raw materials for herbal products | Domestication of the plants | 22 (44%)* |
| New Industrial organisation herbal healthcare | Patient centred service | 19 (38%)* |

Table 1: Innovations integrated in herbal therapy by herbal practitioners

Note: *The innovations are poorly incorporated in the herbal delivery systems due to various challenges.

Figure 2 demonstrates that improved sanitation; prompt processing and sales promotion were practical innovative activities employed in herbal therapy. The open display of herbal products on the ground as well as storage of the products in polythene/plastic bags/jerricans and open tins manifested the rudimentary technology used that compromised the quality of herbal therapy service delivered. These demonstrate the humble conditions under which herbal practitioners, especially women operate to serve their clients and it is argued here that if supported technologically, can probably offer more quality services.



Figure 2: Display, processing and marketing of herbal products in Kakamega town

Source: Akala, 2012

Notes: Two female herbal practitioners pose for a photograph. Seated in the centre is the researcher. Herbal products displayed for sale included Roots, stems, barks, leaves and concoctions (syrup in jerricans, and ash, powder and tablets in plastic paper bags). A filter (green) next to a plastic tin revealed that the some syrups were prepared according to the buyers specifications, hence herbal therapy was demand driven. Instant preparation also minimised wastage through excess supply and perishability of the products and hence sustained buyers' confidence in herbal products.

Pearson correlation coefficient revealed a moderate positive correlation (0.393**, at 2-tailed test) between the degree of innovations applied in herbal therapy and human welfare in terms of number of patients recovered and the process of administering herbal therapies (Table 2). This could be attributed to the low levels of innovation due to financial constraints since most clients hardly paid for the services in line with the cost of alternative health care in USA reported by Nahin *et al.* (2009). It was exacerbated by information inadequacies and discrimination against herbal practitioners by Kenya's health delivery system that considered the chemical composition of herbal concoctions to be the only basis for acknowledging their utility. This required integrated technology similar to the foundations of Chinese medicine (Maciocia, 2005) whose chemical parameters' functionality have been proven to work by managing various ailments.

Unfortunately, herbal practitioner lacked the medium to navigate this requirement due to the poor technology applied and unique incompatibilities between African traditional remedies and modern pharmaceuticals. Thus, it was argued here that effective innovation could optimise local herbal therapy, attract more patients. Its net effect was minimal dependence on foreign herbal products that do not address the unique health problems in Kenya and reduced pressure on modern health care services, leading to improved human health. Consequently, good health resulting from reduced healthcare bills boosts labour supply, investment and job creation. These jointly raise the people's living standards in Kakamega County, the gross domestic product and the general welfare of Kenyans.

| Description | Correlation test | Human welfare | Degree of innovation |
|----------------------|---------------------|---------------|----------------------|
| Human welfare | Pearson correlation | 1 | 0.393** |
| Degree of innovation | Pearson correlation | 0.393** | 1 |

Table 2: Innovations in herbal health care and human health/welfare

Notes: **Correlation significant at the 0.01 level (2-tailed) and N=50

Human welfare is measured in terms of patient recovering after using herbal therapy

9. Conclusion

The herbal health care sector was an open ended system based on poor technologies, operated freely and with little control and supervision from the state. This exposed herbal therapy to inappropriate technologies and abuse by quacks at the detriment of desperate patients characterised by prolonged pain, illness and eventual death. Nevertheless, innovative technologies were capable of translating this marginal health care sector into a vibrant economic hub in Kenya that could earn enormous health and monetary benefits to the residents of Kakamega County. These could not only enable Kenya's herbal product compete favourably in the world market, but also trigger the necessary multiplier and accelerator effects to sufficiently resuscitate the country's economic growth and development.

Rudimentary herbal health care innovations perpetuated the production of sub-standard herbal products in Kakamega County. This harmed human health and exposed the infant local herbal therapy industry to unfair competition from established foreign herbal products. Foreign firms charged exorbitant prices that were often unaffordable by the average Kenyan citizens, hence their rights to healthcare was constrained. This was aggravated the strict scrutiny of the local herbal healthcare sub-sector vis-à-vis the freelance operation of foreign herbal products dealers in the country. Given the scenario, Kenyan consumers were exploited by charlatan local and foreign herbal practitioners, suffered poor health and lived in desperation. Additionally, Kenya lost foreign exchange through importation of herbal remedies, which further worsened her balance of payments and hindered Kenya's effort towards achieving vision 2030.

10. Policy Recommendations

There was a need to establish an elaborate legal framework to regulate entry and exit of herbal practitioners in the herbal therapy industry. Introduction of performance contracts and ISO Certification in the sector could help attract more professional investors in the industry. This might scare off quacks, guard against malpractices and sanitize the sector. Training herbal practitioners in safe and cleaner technologies used in the collection, processing and storage of herbal medicines to guarantee patients quick recovery and uphold human dignity. This was attainable through the acquisition of appropriate drug processing, storage and administration equipment which is currently unaffordable unless the government established a fund to sustain the process.

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