

<https://doi.org/10.33472/AFJBS.6.9.2024.65-77>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Postgraduate Studies in Complementary, Alternative & Traditional Medicine in Nigerian Universities

¹**Sanjoy Kumar Pal**, * PhD, Dip. (Naturopathy)

HOD, Department of Biological Sciences, School of SSIT, #2 Zaria Road, Skyline University Nigeria, Kano,
Nigeria - 700225

²**Sanjeev Rastogi**, MD, DHHM, D. Yoga, C. Ac (China), GHC, PhD, D Litt
State Ayurvedic College and Hospital, Lucknow University, Lucknow

³**Ashok Das**, MD (Homeopathy), PhD

Director, Das Institute of Medical Sciences & Research
AS179/7, Block C - Solua, Khudiramnagar, Rajarhat Road, Kolkata 700136

⁴**Arthur Yin Fan**, MD (CHN), Ph.D., LAc.

McLean Center for Complementary and Alternative Medicine, PLC
Tysons Office Park
8214A Old Courthouse Road, Vienna, VA 22182.

Article History

Volume 6, Issue 9, 2024

Received: 23 Feb 2024

Accepted: 21 Mar 2024

doi: 10.33472/AFJBS.6.9.2024.65-77

Abstract:

Although there is widespread use of various traditional Complementary and Alternative Medicine (CAM) in Africa, only a few countries have institutionalized education systems to exercise these practices. Some estimates suggest that over 80 percent of the African people are in some way dependent on some form of CAM practices. However, very few African countries such as Ghana have appropriately institutionalized CAM practices, provided legal entities and integrated them into regular health care services. As per World Health Organization (WHO) statistics, twenty African nations have created training programs for traditional health practitioners, and 25 African nations have included traditional medicine into their health sciences curricula. Over 40 countries has already developed national traditional medicine policies. There is no shortage of legislation governing CAM in Africa; however, the cause of concern lies in the adoption, implementation, and enforcement of these legislations. In this article the importance of introducing some internationally recognized CAM practices like African Traditional Medicine, Ayurveda, Traditional Chinese Medicine, Homeopathy, Chiropractic and Naturopathy in the Nigerian university post-graduate course curriculum is discussed. These CAM practices have shown to be quite effective in the management of various diseases and conditions in primary health care settings. The students who have cleared their undergraduate studies in Complementary and Alternative Medicine from recognized colleges/universities of Nigeria or abroad will be eligible for 2 years education program and will be offered a post-graduation degree after successfully completing their studies.

Keywords: *Postgraduate Studies, CAM, Alternative Medicine, Nigerian Universities*

Introduction

For ages, African populations have relied on traditional medicine as they are palatable, reliable, economical, and accessible source of medical care (Moeti, 2022). For their most basic medical needs, more than 80% of Africans still rely on traditional medicine. Two decade back very few African countries had given any attention on traditional medicine or indigenous medical practices found in their country. With the intervention of WHO the scenario have now changed drastically. Almost 40 African nations had already created national policies pertaining to traditional medicine, and another 30 had included traditional medicine into their policies. Furthermore, 39 nations have put in place legal frameworks for practitioners of traditional medicine, 34 research institutes are developed in 26 countries that are devoted to the study and advancement of traditional medicine. Nineteen countries have also established facilities for the local manufacture of herbal medicines. Currently, national essential medications lists include more than 45 herbal remedies. Another significant development is that, in an effort to improve human resources for both primary healthcare and traditional medicine, twenty countries have created training programs for health sciences students and practitioners, and twenty more have integrated traditional medicine into their curricula. To guarantee patient safety and high standards of care, a total of 24 nations have created Codes of Ethics and Practice for traditional health practitioners. The WHO recently established the Global Centre for Traditional Medicine in India (Nedungadi et al., 2023).

CAM and Integrative medicine (IM) have received increasing attention since the 1990s mostly in the Western world, especially in USA and Europe (Lim et al., 2017) The growing global acceptance of complementary and alternative medicine (CAM) is attributable to its alignment with biomedical models of professionalization, education, research, and practice (Flesch, 2013). Strategies are now been made for the integration of CAM education in to the curricula of health training institutions so that it can reach mainstream healthcare delivery systems (James et al., 2016). According to an estimate the use of CAM and traditional medicines among the Nigerian population is over 80 percent and there are over 200,000 Traditional Medicine Practitioners (TMPs) in the country. However, these TMPs practice independently with no means of official identification (Omeregbe et al., 2015). The competency of these TMPs is difficult to access as very few are professionally trained. So far there is no university in Nigeria offering comprehensive degree course in complementary and alternative medicine. In recently released National Universities Commission - Core Curriculum Minimum Academic Standards (NUC-CCMAS) curriculum the details of the CAM degree program have been specified (Pal and Lawal, 2023).

In this article the importance of introducing some internationally recognized CAM practices like African Traditional Medicine, Traditional Chinese Medicine, Ayurveda, Homeopathy, Chiropractic and Naturopathy in the Nigerian university post-graduate course curriculum is discussed. These CAM practices have shown to be quite effective in the management of various diseases and conditions in primary health care settings.

African Traditional Medicine

African Traditional Medicine (ATM) is the African indigenous system of health care and a substantial number of people living in this continent is completely dependent on it (Kofi-Tsekpo, 2004). A variety of ancient medical practices incorporating native herbal remedies and African spirituality are referred to as traditional African medicine; practitioners often include midwives, herbalists, bone setters, priests and diviners. Over 4000 plant species having therapeutic potential are used as medicine, many of these plants are found in Africa's tropical region. In addition to being utilized and selected for their therapeutic qualities,

plants also frequently have spiritual and symbolic meaning. The herbalists are often referred to as traditional pharmacologists and possess in-depth experience with herbs and their preparations (Ross, 2010). The herbalists also have a good knowledge of administration and virtue of different herbal medicines. Besides herbs and plants the herbalist also uses various animal parts, and organic & inorganic materials like alum, camphor, shells, pieces of rocks etc., for treatment (Chukwu, 2022). In Africa, traditional birth attendants (TBAs) have a prominent role in providing care for mothers during childbirth (Aziato and Omenyo, 2018). TBAs began their apprenticeship under TBAs in their families as well as other TBAs who were not related. Traditional midwifery has been a part-time occupation for untrained individuals who use certain herbal medicines and spiritual traditions to mediate births and pregnancies. Studies indicate that these TBAs have had very minimal professional education and training (Ribeiro, 2014) Traditional Priest healers serve many roles, in addition to being cultural educators, counselors, social workers, psychologists, and keepers of traditional African religions and rituals they also prescribe medicine. The priest healers offer sacrifice and prayers on behalf of the community in difficult times and enjoy an elevated position in the society (Mokgobi, 2014). In Africa, Traditional Bone setting (TBS) is an important component of traditional medicine. Over 70% of the rural population in Nigeria still rely on the TBS for primary fracture care (Onuminya, 2004). Perhaps more than any other group of traditional caregivers in Nigeria, the traditional bone setters enjoy high levels of trust and patronage from the community. However, most of these bonesetters have no formal education or training. The knowledge of bone setting is passed from one generation to another, hence, adverse events and debilitating outcomes are not uncommon (Dada et al., 2011).

Ayurveda

This alternative medical system originated from India over 5000 years ago (Basnyat and Kolasinski, 2014). Ayurveda is a combination of the Sanskrit terms ayur (life) and veda (science or knowledge). Thus, Ayurveda is also known as "the scripture for longevity" (Murthy et al. 2010). Ayurveda entails the use of natural components to eradicate the fundamental cause of disease by restoring balance, while also promoting a healthy lifestyle to prevent the return of imbalance. The five main elements of Ayurveda are space (*aakash*), water (*jala*), earth (*prithvi*), fire (*teja*), and air (*vayu*). Each elements in various combination produces three humors, or doshas, known as *vata*, *kapha*, and *pitta* (Rastogi, 2010). These doshas functionally regulates the physical, physiological, psychological and emotional components of an individual. Ayurveda dates back to the Indus Valley culture and has been passed down through centuries through oral tradition. One of the main components of Ayurvedic treatment is the use of herbs, over 15,000 medicinal plants are recorded in literature. To obtain better medicinal efficacy, the Ayurvedic literature '*Sarangdhar Samhita*' emphasized the concept of polyherbalism (Parasuraman et al., 2014). The *Charaka Samhita*, the *Sushruta Samhita* and the *Bhela Samhita* are thought to be the most significant and ancient texts that provide authentic information about Ayurveda. This alternative form of medicine is widely practiced in India, Nepal, Sri Lanka and Bangladesh, where its formal education is available in the form of a Bachelor of Ayurvedic Medicine and Surgery (BAMS) and higher degrees like MD and PhD. The legal status of these qualifications is at par with that of qualifications availed in conventional medicine (Rastogi, 2021).

Rheumatoid arthritis (RHA) is a common complicated, chronic, inflammatory illness related to joints. Supplementation with nutritional, dietary, and Ayurveda formulations has been shown to have an important function as an adjuvant in the relief of RHA symptoms due to their influence on the pathological inflammatory processes (Sharma et al. 2021; Rastogi 2021). Various clinical studies conducted with the Ayurvedic medicine *Aswagandha* (*Withania somnifera*) root suggested that it was a potential safe and

efficient traditional treatment for chronic stress, schizophrenia, sleeplessness, anxiety, depression and obsessive-compulsive disorder (Tandon and Yadav, 2020). Diabetes is a multifaceted disease with complicated organ-to-organ and target-to-target interaction. Diabetes care techniques are mostly focused on lowering hyperglycemia through the use of targeted molecular medicines. While they significantly lower hyperglycemia; however, they are insufficient to treat diabetes' complex etiology, chronicity, and systemic consequences. An integrative illness management strategy integrating holistic and reductionist viewpoints is presently being investigated with the assistance of Ayurveda (Rastogi et al., 2023; Thottapillil et al., 2021) *Tridax procumbens*, *Glycosmis pentaphylla*, and *Mangifera indica* are well-known plants found all across India that are extensively used to cure a variety of ailments, including diabetes mellitus. Pre-clinical studies also established the anti-diabetic effects in rats (Petchi et al., 2014) The husk of seeds from *Plantago ovata* or Psyllium husk has been shown to be effective in treatment of constipation, reduce the glycemic index, minimize the risk of cardiovascular diseases, and to decrease cholesterol (Belorio and Gomez 2022). Poly herbal Ayurvedic preparation Triphala Rasayana consisting of *Phyllanthus emblica* L., *Terminalia bellirica* Roxb, and *Terminalia chebula* Retz have shown to be effective in treatment of many different conditions. Triphala Rasayana has a number of therapeutic properties, including antioxidant, anticancer, antidiabetic, antibacterial, immunomodulatory, and anticataract. It is also regarded as a cornerstone in the treatment of digestive disorders (Ahmed et al., 2021).

The most important contribution of Ayurveda in health care is not limited to the therapeutic potential of its modalities but is ingrained in its preventive and curative potential having a lasting effect beyond the period of its actual intervention. Ayurveda proposes for corrective measures which act slow but have the possibility of correcting the derangements at cellular and molecular levels (Rastogi, 2010).

Traditional Chinese Medicine

Traditional Chinese medicine (TCM) has evolved over thousands of years and is a popular CAM today. TCM practitioners use various psychological and/or physical approaches (such as acupuncture and tai chi) as well as herbal products to address health problems (Anonymous, 2024a) Curing rheumatoid arthritis (RA) is a challenging task. Numerous techniques have been employed to treat it, and TCM is considered to be an important strategy to manage RA. Acupuncture, massage, and Chinese herbs have all been shown to provide varied degrees of therapeutic benefits for RA (Zhang et al., 2010). Being a multi-component and multi-target strategy, TCM perfectly complements the comprehensive idea of systems biology and helpful in the treatment of RA (Lu et al., 2015). Neck pain or Neck Bi-syndrome is frequently treated with various TCM modalities. A unique noninvasive treatment method combination of acupuncture and massage is found to be effective. Few case reports published suggest that this TCM can be considered a good treatment option for neck pain (Japaries et al., 2022). According to some research, TCM acupuncture in conjunction with Western medicine can effectively treat neck, shoulder, lumbar, and leg pain. It can also help patients' motor performance and lessen inflammatory diseases (Tao et al., 2015). Acupuncture has been shown to alleviate the symptoms of carpal tunnel syndrome, and it may be incorporated into patients' holistic care plans (Khosrawi et al., 2021). Studies have indicated that acupuncture could be beneficial for many of pain disorders, such as post-operative pain and osteoarthritis-related knee pain. Additionally, it might lessen joint pain brought on using aromatase inhibitors, which are prescribed to patients with breast cancer (Anonymous, 2024b).

Chinese herbal medicine is an important component of TCM have a long history. The Divine Husbandman's Classic of Materia Medica (or *Shen Nong Ben Cao Jing*) is the earliest extant Materia

Medica text, compiled in the Eastern Han Dynasty (25–220 AD). This literature summarizes medical experiences up until the Han Dynasty and keeps track of 365 medicinals. Medicinals are categorized into three groups according to their toxicity and therapeutic effects: high-grade, medium-grade, and low-grade (Zhao et al., 2018). A document from the 4th century Jin dynasty indicates that the popular Chinese plant sweet wormwood (*Artemisia annua*) was used to treat fevers, a major sign of malaria. It was later discovered through testing that it decreased the blood's concentration of malaria parasites (Anonymous 2015). According to TCM theory, everything, including bodily organs, is made of the five elements: Wood, Fire, Earth, Metal, and Water. The five tastes - sweet, salty, bitter, pungent, and sour that correspond to the five elements are used to categorize herbs, for example, since the skin is associated with a the Metal element organ Lung, it could be treated with a pungent herb. Numerous medical conditions, such as heart disease (Wang et al. 2017), stroke, mental health issues, and respiratory illnesses (including bronchitis and the common cold), have been researched with Chinese herbal medications. In many countries, TCM herbology has been widely used by TCM providers and has received wide acceptance by patients. However, due to insufficient data and research methodology challenges, it is difficult to draw a definite conclusion because of the quality of the studies (Fung and Linn, 2015).

Homeopathy

Homeopathy is a commonly used alternative medical method that uses modest doses of various drugs to encourage auto-regulation and self-healing (Tangelloju et al., 2022). Homeopathy originated from Germany by the end of eightieth century. This alternative medicine was the brainchild of physician Samuel Hahnemann. He believed in *similia similibus curentur*, i.e., substance that causes symptoms of a disease in healthy people can cure similar symptoms in sick people. Homeopathic medicines are primarily extracted from nature rather than being chemically synthesized (Aphale and Sharma, 2022). Homeopathy has proven robust, is geographically extensive, and is recognized as a legitimate medical practice in nations like Germany, France, Switzerland, and India despite a long history of scientific dispute (Fixsen, 2018). In homeopathic treatment methodology the medication is based on the totality of signs and symptoms exhibited by the patients.

The most typical cause for seeking homeopathic intervention is for treatment of respiratory infections in children (Buskin et al., 2016). Many clinical studies have indicated that homeopathic remedies are not only effective but also quite safe in treatment of upper respiratory tract infection (Jong et al., 2016; Thinesse-Mallwatz et al., 2015; Steinsbekk et al., 2005). Some clinical studies have indicated that homeopathy treatment was also effective in ear infection, rhinopharyngitis, sinusitis, and tonsillitis (Fixsen, 2018).

Homeopathic medicines are regularly used by cancer primarily for palliation (Tangelloju et al., 2022) and sometimes for active treatment (Pal, 2013). Homeopathic medicine are prescribing for the management of chronic and acute periodontal conditions (Farrer et al., 2013). A clinical report has suggested that homeopathic medicine was found to partially effective in management of oligomenorrhea (41.7%), leucorrhea (34.1%), polycystic ovary (33.3%) and other gynecological problems (Saha et al., 2015a). Clinical record published from a homeopathic hospital in India indicated that among the 2905 patients that were followed up for ailment such as osteoarthritis, cough, piles, dysfunctional uterine bleeding, conjunctivitis, chronic suppurative otitis media, etc., positive response was seen in 2272 (78.2%) patients, 183 (6.3%) negative, and 450 (15.5%) showed no change (Saha et al., 2015b).

Naturopathy & Yoga

Naturopathy emerged from the European Natural Cure movement which started in the 19th century for the promotion of 'Hygienic Medicine' (Brown, 1988). Naturopathy is a comprehensive field as opposed to a

specific technique, which adopts natural means such as hydrotherapy, sunlight, exercise, yoga, herbs, fruits and vegetables, as well as eliminating stress, overeating, tea, coffee, and alcohol. As general practitioners, naturopaths handle a broad range of medical conditions. Preventive treatment is emphasized, and they believe in treating the "whole person"—that is, the soul in addition to the physical body. To improve health, naturopaths frequently advise dietary and lifestyle modifications (Boughton and Frey, 2006). Naturopathy is practiced and institutionalized in many countries like Australia, Canada, Switzerland, India, and USA (Wardle et al., 2019; Verhoef et al., 2006; Meier-Girard et al., 2022; Brahmankar and Singh 2017; Boon et al. 2004). According to the World Naturopathic Federation (WNF), naturopathy is practiced in over 81 countries of the world (Dunn et al., 2021).

Evidence that has been gathered over the last few decades has demonstrated positive impact of yoga on health and illness (Dutta et al., 2022). *Neti Kriya* is one of the six purification procedures that comprise the most significant portion of *Hatha Yoga*. *Neti* aid in the prevention and treatment of upper respiratory tract illnesses. Some studies have shown beneficial effect of *Neti* in treating sinusitis, rhinosinusitis, allergic conditions and in improving vision (Meera et al., 2020). Randomized controlled trials indicated that yoga and mindfulness-based stress reduction was more advantageous than active control in lowering systolic blood pressure, low density lipoprotein, cholesterol, fasting blood glucose, resting heart rate, and high frequency heart rate variability (Pascoe et al., 2017). Yoga was also helpful in reducing back pain, and overall mental health (Hampton and Bartz, 2021). Meditation, pranayama, and yoga was found effective in reducing anxiety depression, anger and promote a sense of well-being in young students (Sunita et al., 2022). Yoga therapy was found to be effect in management of extremity pain from infections, trauma, degenerative and autoimmune diseases, as well as disorders of the spine and nervous system (Nair et al., 2023). The medicinal use of water is known as Hydrotherapy (water therapy), which incorporated various methods for treatment like ice packs, hot tubs, saunas, cold water treatments, hot springs, vapors, mineral springs, water exercises, wet towel applications, sitz baths and water massage. Hydrotherapy has been shown to have positive impacts on energy, sleep, cognitive function, physical function, work capacity, and daily life participation (Devkate et al., 2016). Hydrotherapy was found very effective in treatment of chronic constipation (Nilawanti and Lado, 2019).

Chiropractic

Chiropractic is a healthcare profession that cares for our neuromusculoskeletal system, which consists of your bones, muscles, tendons, ligaments, and nerves. Spinal adjustments by a chiropractor help to maintain appropriate alignment and reduce neck and back pain. Though spinal manipulation, is the standard course of treatment. There are other therapeutic options as well, such as exercise and dietary guidance (Anonymous, 2024c) Manipulation can sometimes result in some mild to serious adverse effects (Ernst, 2008). Chiropractic schools, as well as the laws and rules that regulate them, are heavily biased in favor of wealthy nations. However, the presence of chiropractors were reported from over 90 countries (Stochkendahl et al., 2019). Out of these chiropractic practice was legally recognized in 75% countries. Chiropractors are also highly respected by other health professionals (Beynon and Walker, 2021). More than 11 percent of people worldwide suffer from some form of spine discomfort. This result in a significant personal, social, and economic burden. As part of a multimodal approach, spinal manipulation therapy is currently advised in conjunction with exercise for neck pain. For low back pain, it is also suggested as a first-line of management (Gevers-Montoro et al., 2021). Although their primary focus is on treating musculoskeletal diseases, chiropractors also have a duty to address other forms of prevention of musculoskeletal problems (Goncalves et al., 2017).

Postgraduate Studies in Complementary, Alternative & Traditional Medicine

The students who have undergraduate degrees in Complementary and Alternative Medicine from recognized colleges/universities of Nigeria or abroad will be eligible for 2 years education program and will be offered a post-graduate degree after successful completion of their studies. The various courses that the students can learn in different disciplines are given in table 1. After completion, the students who have studied 4 years of degree courses will be given a M.Sc. degree and those who have studied for 6 years will be given a M.D. degree in Complementary and Alternative Medicine. The area of specialization will be specified in the certificate.

Conclusion

The popularity of various CAM practices is increasing and the confidence level of the general population is strong and growing (Phutrakool and Pongpirul 2022). Any CAM practice will not get popular among the masses if it is not beneficial for the users. Propaganda and advertisement cannot make any CAM to survive the test of time. The increase in global popularity of various CAM practices viz. Ayurveda, homeopathy, naturopathy & yoga, TAM, TCM etc., has become very evident. Proper clinical trials and experimental works have established their claim as treatment alternatives or as complementary medicine. There is an acute shortage of trained healthcare professional across the globe, hence, it is important that the government of various developing countries such as Nigeria, should encourage and propagate the spread of evidence based CAM practices. Properly trained CAM providers can play an important role in the primary health care (Faqueti and Tesser, 2018). However, the progress for establishing evidence based CAM practices in Nigeria is slow. More focused encouragement from the government is required to provide the momentum in this area. The study of CAM as discipline should be made mandatory in all recognized universities in Nigeria. The government should make provision to provide the extra funding required to start the CAM courses. It is necessary to streamline, make clear, and make the norms and regulations pertaining to CAM practices easily accessible to all.

References:

- Ahmed, S., Ding, X. and Sharma, A. (2021). Exploring scientific validation of *Triphala Rasayana* in ayurveda as a source of rejuvenation for contemporary healthcare: An update. *J Ethnopharmacol.* 273, 113829.
- Anonymous. (2015). How traditional Chinese medicine drove the discovery of a Nobel-winning anti-malarial drug. *The Conversation*. October 7, <https://tinyurl.com/zh8suzfc>
- Anonymous. (2024a). Traditional Chinese Medicine: What You Need To Know. Retrieved from: <https://www.nccih.nih.gov/health/traditional-chinese-medicine-what-you-need-to-know>
- Anonymous. (2024b). Acupuncture: What You Need To Know. <https://tinyurl.com/26scy5rp>
- Anonymous. (2024c). Chiropractic: In Depth. National Centre for Complementary and Integrative Health. 2019. <https://www.nccih.nih.gov/health/chiropractic-in-depth>
- Aphale, P. and Sharma, D. B. (2022). Conventional homeopathic medicine and its relevance to modern medicine. *Altern Ther Health Med.* 28 (5), 54-59.
- Aziato, L. and Omenyo, C. N. (2018). Initiation of traditional birth attendants and their traditional and spiritual practices during pregnancy and childbirth in Ghana. *BMC Pregnancy Childbirth.* 18, 64. <https://doi.org/10.1186/s12884-018-1691-7>
- Basnyat, S. and Kolasinski, S. L. (2014). Ayurvedic medicine for rheumatoid arthritis. *Curr Rheumatol Rep.* 16(8), 435.
- Belorio, M. and Gómez, M. (2022). Psyllium: a useful functional ingredient in food systems. *Crit Rev Food Sci Nutr.* 62(2), 527-538. doi: 10.1080/10408398.2020.1822276.
- Beynon, A. M. and Walker, B. F. (2021). The best aspects of being a chiropractor. *J Can Chiropr Assoc.* 65(1), 59 – 65.
- Boon, H. S., Cherkin, D. C., Erro, J., Sherman, K. J., Milliman, B., Booker, J., Cramer, E. H., Smith, M. J. Deyo., R. A. and Eisenberg, D. M. (2004). Practice patterns of naturopathic physicians: results from a random survey of licensed practitioners in two US States. *BMC Complement Altern Med.* 20:4, 14. doi: 10.1186/1472-6882-4-14.
- Boughton, B. and Frey, R. (2006). "Naturopathic Medicine." Gale Encyclopedia of Medicine, 3rd ed. Encyclopedia.com. <http://www.encyclopedia.com/doc/1G2-3451601121.html>
- Brahmankar, Y. and Singh, A. S. (2017). Promoting Naturopathy in India. *Indian J Public Health Res Dev.* 8(4), 678-684.
- Brown, P. S. (1988). Nineteenth-century American health reformers and the early nature cure movement in Britain. *Medical History.* 32 (2): 174–194. doi:10.1017/S0025727300047980
- Buskin, S., Pilar, M., Huckstadt, R. and Salatino, S. (2016). Use of natural and homeopathic remedies in children ailments. *Clin Manag Issues.* 10, 33 - 48.
- Chukwu, C. A. (2022). African traditional medicine and the practice of medicine in Africa: an ethical and existential evaluation. *IJIRORO.* 1(1), 33-46.

Sanjoy Kumar Pal / *Afr.J.Bio.Sc.* 6(9) (2024) 65-77

Dada, A. A., Yinusa, W. and Giwa, S. O. (2011). Review of the practice of traditional bone setting in Nigeria. *African Health Sciences*. 11(2), 262 – 265.

Devkate, G. V., Tate, S. S., Deokate, S. B., Bhujbal, A. S., Tupe, A. P. and Patil, R. N. (2016). Hydrotherapy a new trend in disease treatment. *Human Journals*. 5(2), 117-135.

Dunn, J. M., Steel, A. E., Adams, J., Lloyd, I., Groot, N. D., Hausser, T. and Wardle, J. (2021). Characteristics of global naturopathic education, regulation, and practice frameworks: results from an international survey. *BMC Complement Med Ther*. 21: 67. doi: 10.1186/s12906-021-03217-1

Dutta, A., Aruchunan, M., Mukherjee, A., Metri, K. G., Ghosh, K. and Basu-Ray, I. (2022). A comprehensive review of Yoga research in 2020. *J Integr Complement Med*. 28(2), 114-123. doi: 10.1089/jicm.2021.0420.

Ernst, E. (2008). Chiropractic: a critical evaluation. *J Pain Symptom Manage*. 35(5):544-562.

Faqueti, A. and Tesser, C. D. (2018). Use of complementary and alternative medicine in primary healthcare in Florianópolis, Santa Catarina, Brazil: user perception. *Cien Saude Colet*. 23(8), 2621-2630.

Farrer, S., Baitson, E. S., Gedah, L., Norman, C., Darby, P. and Mathie, R. T. (2013). Homeopathic prescribing for chronic and acute periodontal conditions in 3 dental practices in the UK. *Homeopathy*. 102(4), 242-247. doi: 10.1016/j.homp.2013.06.003.

Fixsen, A. (2018). Homeopathy in the age of antimicrobial resistance: is it a viable treatment for upper respiratory tract infections? *Homeopathy*. 107(2), 99-114.

Flesch, H. (2013). A foot in both worlds: education and the transformation of Chinese medicine in the United States. *Med Anthropol*. 32(1), 8-24.

Fung, F. Y. and Linn, Y. C. (2015). Developing traditional Chinese medicine in the era of evidence-based medicine: current evidences and challenges. *J Evid Based Complementary Altern Med: eCAM*. 2015:425037. <https://doi.org/10.1155/2015/425037>

Gevers-Montoro, C., Provencher, B., Descarreaux, M., Mues, A. O. D., Piché, M. (2021). Clinical effectiveness and efficacy of chiropractic spinal manipulation for spine pain. *Front Pain Res.* (Lausanne). 25:2, 765921. doi: 10.3389/fpain.2021.765921.

Goncalves, G., Scanff, C. L. and Leboeuf-Yde, C. (2017). Primary prevention in chiropractic practice: a systematic review. *Chiropr Man Therap*. 20:25, 9. doi: 10.1186/s12998-017-0140-4.

Hampton, A. and Bartz, M. (2021). Therapeutic efficacy of yoga for common primary care conditions. *WMJ*. 120(4), 293-300.

James, P. B., Bah, A. J. and Kondorvoh, D. M. (2016). Exploring self-use, attitude and interest to study complementary and alternative medicine (CAM) among final year undergraduate medical, pharmacy and nursing students in Sierra Leone: a comparative study. *BMC Complement Altern Med*. 16:121, doi: 10.1186/s12906-016-1102-4.

Japaries, W., Wen, B. and Zhang, H. (2022) Pestle Needle (Chu Zhen) treatment for neck pain. *Med Acupunct*. 34(6), 400-404. doi: 10.1089/acu.2021.0051.

Jong, M. C., Buskin, S. L., Ilyenko, L., Kholodova, I., Burkart, J., Weber, S., Keller, T. and Klement, P. (2016). Effectiveness, safety and tolerability of a complex homeopathic medicinal product in the prevention of recurrent acute upper respiratory tract infections in children: a multicenter, open, comparative,

Sanjoy Kumar Pal / *Afr.J.Bio.Sc.* 6(9) (2024) 65-77

randomized, controlled clinical trial. *Multidiscip Respir Med.* 11,19. <https://doi.org/10.1186/s40248-016-0056-1>

Khosrawi, S., Moghtaderi, A. and Haghghat, S. (2012). Acupuncture in treatment of carpal tunnel syndrome: A randomized controlled trial study. *J Res Med Sci.* 17(1), 1–7.

Kofi-Tsekpo, M. (2004). Institutionalization of African traditional medicine in health care systems in Africa. *Afr J Health Sci.* 11(1-2), i-ii. doi: 10.4314/ajhs.v11i1.30772.

Lim, E., Vardy, J. L., Oh, B. and Dhillon, H. M. (2017). Comparison of integrative medicine centers in the USA and Germany: a mixed method study. *Support Care Cancer.* 25(6),1865-1872.

Lü, S., Wang, Q., Li, G., Sun, S., Guo, Y. and Kuang, H. (2015). The treatment of rheumatoid arthritis using Chinese medicinal plants: From pharmacology to potential molecular mechanisms. *J Ethnopharmacol.* 176, 177-206. doi: 10.1016/j.jep.2015.10.010.

Meera, S., Rani, M. V., Sreedhar, C. and Robin, D. T. (2020). A review on the therapeutic effects of NetiKriya with special reference to JalaNeti. *J Ayurveda Integr Med.* 11(2), 185-189.

Meier-Girard, D., Lu`thi, E., Rodondi, P-Y. and Wolf, U. (2022). Prevalence, specific and nonspecific determinants of complementary medicine use in Switzerland: Data from the 2017 Swiss Health Survey. *PLoS ONE.* 17(9), e0274334. <https://doi.org/10.1371/journal.pone.0274334>

Moeti, M. (2022). African Traditional Medicine Day 2022. 31 August 2022. <https://www.afro.who.int/regional-director/speeches-messages/african-traditional-medicine-day-2022>

Mokgobi, M. G. (2014). Understanding traditional African healing. *Afr J Phys Health Educ Recreat Dance.* 20(Suppl 2), 24–34.

Murthy, M. R. V., Ranjekar, P. K., Ramassamy, C. and Deshpande M. (2010). Scientific basis for the use of Indian ayurvedic medicinal plants in the treatment of neurodegenerative disorders: ashwagandha. *Cent Nerv Syst Agents Med Chem.* 10(3), 238-46.

Nair, P. M. K., Kriplani, S., Kodali, P. B., Maheshwari, A., Bhalavat, K. D., Singh, D., Saini, S., et al. (2023). Characteristics of patients who use yoga for pain management in Indian yoga and naturopathy settings: a retrospective review of electronic medical records. *Front Pain Res. (Lausanne).* 15(4), 1185280. doi: 10.3389/fpain.2023.1185280.

Nedungadi. P., Salethoor, S. N., Puthiyedath, R., Nair, V. K., Kessler, C. and Raman, R. (2023). Ayurveda research: Emerging trends and mapping to sustainable development goals. *J Ayurveda Integr Med.* 14(6), 100809. doi: 10.1016/j.jaim.2023.100809.

Nilawati, N. and Lado, W. O. (2019). The effectiveness of warm water therapy for constipation. Abstract Proceedings: International Scholars Conference. 7 (1), 475-482.

Omoriegie, E. H., Aliyu, I. J., Danjuma, K. C. and Folashade, K. O. (2015). Integrating Traditional Medicine Practice into the Formal Health Care Delivery System in the New Millennium–The Nigerian Approach: A Review. *Int J Life Sci.* 4(2), 120-128.

Onuminya, J. E. (2004). The role of the traditional bonesetter in primary fracture care in Nigeria. *SAMJ.* 94, 652-658.

Pal, S. K. (2013). Best Case Series Program: submission of unconventional therapies from India. *Integrative Cancer Therapies.* 2013; 12(6): 453.

- Pal, S. K. and Lawal, I. U. (2023). Current status and future of traditional, complementary and integrative medicine in Nigeria. *Trop J Nat Prod Res.* 2023; 7(12): 5403-5409.
- Parasuraman, S., Thing, G. S. and Dhanaraj, S. A. (2014). Polyherbal formulation: Concept of Ayurveda. *Pharmacogn Rev.* 8(16), 73-80.
- Pascoe, M. C., Thompson, D. R. and Ski, C. F. (2017). Yoga, mindfulness-based stress reduction and stress-related physiological measures: A meta-analysis. *Psychoneuroendocrinology.* 86, 152-168.
- Petchi, R. R., Vijaya, C. and Parasuraman, S. (2014). Antidiabetic activity of polyherbal formulation in streptozotocin - nicotinamide induced diabetic Wistar rats. *J Tradit Complement Med.* 4(2), 108-117.
- Phutrakool, P. and Pongpirul, K. (2022). Acceptance and use of complementary and alternative medicine among medical specialists: a 15-year systematic review and data synthesis. *Syst Rev.* 11, 10. <https://doi.org/10.1186/s13643-021-01882-4>
- Rastogi, S. (2010). Building bridges between Ayurveda and Modern Science. *Int J Ayurveda Res.* 1(1), 41-46.
- Rastogi, S. (2021). Ayurveda education in India: Addressing the human resource barriers to optimize the delivery. *J Ayurveda Integr Med.* 12(2), 403-407.
- Rastogi, S. (2021). Emanating the specialty clinical practices in Ayurveda: Preliminary observations from an arthritis clinic and its implications. *J Ayurveda Integr Med.* 12(1), 52-57.
- Rastogi, S., Singh, N., Gutch, M. and Bhattacharya, A. (2023). *Prameha purvarooopa* as diabetes risk predictor - trends from a retrospective cohort study of newly diagnosed type 2 diabetes patients. *J Ayurveda Integr Med.* 14(1), 100671. doi: 10.1016/j.jaim.2022.100671.
- Ribeiro, S. D. (2014). Traditional Birth Attendance (TBA) in a health system: what are the roles, benefits and challenges: a case study of incorporated TBA in Timor-Leste. *Asia Pac Fam Med.* 13(1), 12.
- Ross, E. (2010). Inaugural Lecture: African Spirituality, Ethics and Traditional Healing – Implications for Indigenous South African Social Work Education and Practice. *South African Journal of Bioethics and Law.* 3, 44-51.
- Saha, S., Koley, M., Saha, S., Singh, R., Hossain, M. M. and Pramanik I. (2015a). Obstetrics and gynecology outpatient scenario of an Indian homeopathic hospital: A prospective, research-targeted study. *J Tradit Complement Med.* 6(2), 168-71. doi: 10.1016/j.jtcme.2015.01.003.
- Saha, S., Koley, M., Ghosh, S., Giri, M., Das, A. and Goenka, R. (2015b). Documentation of prescriptions and clinical outcomes in a homeopathic hospital setting in West Bengal, India. *J Evid Based Complementary Altern Med.* 20(3), 180-5. doi: 10.1177/2156587214568459.
- Sharma, D., Chaubey, P. and Suvarna, V. (2021). Role of natural products in alleviation of rheumatoid arthritis-A review. *J Food Biochem.* 45(4), e13673. doi: 10.1111/jfbc.13673.
- Steinsbekk, A., Fønnebø, V., Lewith, G. and Bentzen, N. (2005). Homeopathic care for the prevention of upper respiratory tract infections in children: a pragmatic, randomised, controlled trial comparing individualised homeopathic care and waiting-list controls. *Complement Ther Med.* 13, 231–238.

- Stochkendahl, M. J., Rezai, M., Torres, P., Sutton, D., Tuchin, P., Brown, R. and Côté, P. (2019). The chiropractic workforce: a global review. *Chiropr Man Therap.* 27, 36. <https://doi.org/10.1186/s12998-019-0255-x>
- Sunita, L. M., Mondal, H., Kumar, M., Kapoor, R. and Gandhi, A. (2022). Effect of practicing meditation, pranayama, and yoga on the mental health of female undergraduate medical students: an interventional study. *Cureus.* 14(9), e28915. doi: 10.7759/cureus.28915
- Tandon, N., Yadav, S. S. (2020). Safety and clinical effectiveness of *Withania Somnifera* (Linn.) Dunal root in human ailments. *J Ethnopharmacol.* 255, 112768. doi: 10.1016/j.jep.2020.112768.
- Tangelloju, A., Chakravarti, R., Singh, R., Bhattacharya, B., Ghosh, A., Bhutia, S. K., Ravichandiran, V. and Ghosh, D. (2022). A review on the current status of homeopathy in the clinical management of cancer. *Curr Drug Targets.* 23 (13), 1252-1260.
- Tao, W. W., Jiang, H., Tao, X. M., Jiang, P., Sha, L. Y. and Sun, X. C. (2016). Effects of acupuncture, Tuina, Tai Chi, Qigong, and Traditional Chinese Medicine Five-Element Music Therapy on symptom management and quality of life for cancer patients: a meta-analysis. *J Pain Symptom Manage.* 51(4), 728-747. doi: 10.1016/j.jpainsymman.2015.11.027.
- Thinesse-Mallwitz, M., Maydannik, V., Keller, T. and Klement, P. (2015). A homeopathic combination preparation in the treatment of feverish upper respiratory tract infections: an international randomized controlled trial. *Forsch Komplement Med.* 22, 163 - 170.
- Thottapillil, A., Kouser, S., Kukkupuni, S. K. and Vishnuprasad, C. N. (2021). An 'Ayurveda-Biology' platform for integrative diabetes management. *J Ethnopharmacol.* 268, 113575. doi: 10.1016/j.jep.2020.113575.
- Verhoef, M., Boon, H. S. and Mutasingwa, D. R. (2006). The scope of naturopathic medicine in Canada: An emerging profession. *Social Science & Medicine.* 63(2), 409-417.
- Wang, Y., Wang, Q., Li, C., Lu, L., Zhang, Q., Zhu, R. and Wang, W. (2017). A review of Chinese herbal medicine for the treatment of chronic heart failure. *Curr Pharm Des.* 23(34), 5115-5124.
- Wardle, J., Steel, A., Casteleijn, D. and Bowman, D. (2019). An evidence based overview of naturopathic practice in Australia. *Aust J Herb Naturop Med.* 31(1), 9-13.
- Zhang, P., Li, J., Han, Y., Yu, X. W. and Qin, L. (2010). Traditional Chinese medicine in the treatment of rheumatoid arthritis: a general review. *Rheumatol Int.* 30(6), 713-8. doi: 10.1007/s00296-010-1370-0.
- Zhao, Z., Guo, P. and Brand, E. (2018). A concise classification of bencao (*materia medica*). *Chin Med.* 13. doi: 10.1186/s13020-018-0176-y