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Yiatrosafia yia ton Anthropon: Indigenous Knowledge of Medicinal, Aromatic and Cosmetic (MAC) Plants in the Utilisation of the Plural Medical System in Pírgos and Práitoria for Community Health Development in Rural Crete, Greece

Aiglsperger, J.

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Author: Aiglsperger, Judith

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Chapter II THEORETICAL ORIENTATION

The following Paragraphs aim at describing the concept of transcultural health care utilisation behaviour within the wider context of historical, conceptual and strategic theories with reference to scholars of a variety of disciplines. Paragraph 2.1 in detail introduces the concept of humoral medicine, which originated in Ancient Greece around the 5th century B.C. and has since come to constitute a major ethnomedical system, of which certain useful components have to this day remained visible in various forms of medical practise around the world. The doctrines of scholars of medicine practising in Ancient Greece, such as Hippocrates, Theophrastus and Dioscorides, have largely had a crucial impact on later concepts of health, illness and medicine. As Vokou *et al.* (1993: 187) notice: ‘[...] Greece gave birth to Hippocrates and Dioscorides who formed the basis of modern medicine by recognising and using the therapeutic qualities of plants’. In order to highlight different contemporary forms of medicine, a distinction is made between traditional, transitional and modern medical systems, as they vary in terms of historical development and present-day configurations. The concept of herbal medicine is coined in an attempt to embrace any form of plant-based medicine, which not only forms a rather significant subcategory of traditional, as well as complementary and alternative medicine, but also pays tribute to modern medicine in the form of providing a sound basis for the development of pharmaceutical medicines.

Following an elaboration of the historical development and present conceptualisation of different forms of medicine, Paragraph 2.2 highlights the importance of Indigenous Knowledge Systems (IKS) within the overall context of medicine. In general, forms of traditional and herbal medicine are rooted in systems of ethnobotanical and indigenous medical knowledge, both of which are specific examples of IKS. Concepts and strategies related to the study of indigenous systems of knowledge, practice and belief are emphasised within the realm of the disciplines of ethnobotany and ethnomedicine as well as medical anthropology. In view of research conducted on herbal medicine, which generally involves a combination of ethnobotanical and ethnomedical strategies alike, the concept of Medicinal, Aromatic and Cosmetic (MAC) plants is introduced as a crucial aspect within the study of medicine at large. Paragraph 2.3 subsequently accentuates the potential contribution, which IKS make to the promotion of community health development by means of bridging the gap between traditional and modern medical systems at the community level (*cf.* Slikkerveer 2006).

The ‘Ethnoscience Approach’ is discussed in the light of the following concepts: Primary Health Care and Community Health Development; the Stages of Illness Behaviour and Medical Care; and Medical Pluralism. Finally, Paragraph 2.4 presents an example of medical pluralism in relation to the present research area of Crete by identifying traditional, transitional and modern medical systems.

2.1 Medical Traditions and Development

2.1.1 Humoral Medicine and Healing in Ancient Greece

‘I swear by Apollo the physician, and [Asclepius], Hygeia and Panacea and all the gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this covenant’ (Tan 2002: 006) (2.1). Forming a well-known medical text created in Ancient Greece, the ‘Hippocratic Oath’ is to this day sworn by students of medicine worldwide in a form adapted to current medical doctrines. In general, the Hippocratic Oath refers to the ethical conduct of physicians towards the teaching and practice of medicine, as well as towards the patients involved (*cf.* Hahn 1995). Born on the Greek island of Kos around 460 B.C., Hippocrates is regarded as the ‘Founding Father of Medicine’ as an empirical science by various scholars across disciplines (*cf.* Foster & Anderson 1978; Tan 2002; United States National Library of Medicine 2012). Schiefsky (2005: 1) interprets Hippocratic doctrines as: *‘the first evidence in the history of*

Greek medicine of a sustained reaction against the attempt to base medical practice on theories drawn from natural philosophy'. In this way, Hippocratic doctrines provide a sound basis for the development of a medical science based on observation and experience (cf. Schiefsky 2005). Prior to this application of natural theories, the healing practices in Ancient Greece were largely based on the supernatural, the mythical and the ritual calling for divine powers and miraculous cures (cf. DeHart 1999; Duffin 1999; Tan 2002). Eventually, the doctrines of Hippocratic medicine, based on rural and popular beliefs, separated the observation-based approach from supernatural perceptions about health and illness and came to explain the complexity of human disorders on the basis of natural instead of supernatural causes. As DeHart (1999: 350) reports: *'It is this period, roughly the eighth through the fifth centuries [B.C.], that saw the move from a cultural perception of the cosmos as ritually and mythically accessible, to one that envisioned the human presence as a contemplative partaking of the phenomenal cosmic order'*. The development of Hippocratic medicine has been enhanced by the emergence of the new individualised and less communal citizen resident in the Greek city-state and has been accompanied by other cultural developments, such as the introduction of philosophy, law and historiography (cf. DeHart 1999). In spite of the general transition from supernatural to natural conceptions of health and illness, Tan (2002) argues that traces of the mythical as well as the mythological did not disappear entirely, as is shown by the reference to the god of health Apollo in the opening phrase of the Hippocratic Oath (2.2).

Emphasising the distinction between supernatural and natural conceptions of health and illness, Foster & Anderson (1978) and Foster (1983) differentiate between personalistic forms of illness caused by the rather multi-faceted, aggressive interference of a human or supernatural agent and naturalistic forms of illness, which link the cause of ill-health to a rather single-faceted imbalance of insensate body humours. Dependent on causality beliefs, the treatment of personalistic disorders is hereby commonly administered within the scope of spiritual and religious belief systems, while naturalistic conditions are generally treated by means of non-spiritual and non-religious practices. Treatment of personalistic forms of illness is usually directed at identifying the causing agent and involves those types of healers, who are generally able to respond to multiple levels of illness causality. On the other hand, treatment of naturalistic forms of illness involves consultation between the patient and the medicine provider and is commonly administered on a single level of illness causality (cf. Foster & Anderson 1987). *'[...] [With] a good understanding of causality beliefs the nature and role of curers and the logic of their therapies become readily apparent'* (Foster 1983: 21). Nevertheless, Foster & Anderson (1978) moreover argue that religious beliefs not only contribute to the explanation of causes of personalistic illnesses, but are also involved in the treatment of naturalistic illnesses. In view of this distinction between personalistic and naturalistic perceptions of health and illness, Duffin (1999: 70) explains that: *'[the] Greco-Roman world had a pantheon of gods and an extensive mythology, but it also recognized a natural world of four elements and a healthy balance in the human body of four humours'*.

The naturalistic perception of health and illness advocated within the doctrines of Hippocratic medicine introduced the concept of humoral medicine, which developed on the basis of a notion of four body elements or humours identified as 'black bile', 'yellow bile', 'phlegm' and 'blood'. Based on a hot-cold dichotomy, body humours are linked to a number of qualities, which produce the following concepts: 'blood' (hot and moist), 'phlegm' (cold and moist), 'black bile' (cold and dry) and 'yellow bile' (hot and dry). In this respect, a state of health is related to the equilibrium of body humours, while any disturbance of this equilibrium results in a state of ill-health (cf. Foster & Anderson 1978; Duffin 1999). Duffin (1999) and Tan (2002) suggest that the notion of body humours is rooted in the Greek theory of the four elements 'earth', 'air', 'fire' and 'water'. Leslie (1976) and Foster & Anderson (1978) explain that the distribution of body humours depends on the age, gender, temperament, general condition and habits of food consumption of each individual, as well as on climate and weather conditions. Consequently, the distribution of body humours can be influenced by metaphoric insults in terms of food or drinks

as well as by thermal insults derived from environmental exposure (*cf.* Foster 1987). In this way, Pollio *et al.* (2008) argue that a balanced diet and limited exposure to environmental extremes promote a state of health. Since treatment of illness is largely based on the principle of opposition, the balance of humours is restored by means of counteracting the nature of the medical condition (*cf.* Pollio *et al.* 2008). As noticed by Foster (1983; 1987), Duffin (1999) and Molenaar (1999), treatment methods of humoral medicine are classified according to their opposing qualities and include: practices of cupping, leeching and purging; the use of suppositories and plasters; a variety of herbal, animal and mineral medicines; special diets based on the opposing heating and cooling qualities of food; as well as exercises, baths and rest in general. As Foster & Anderson (1978: 58) claim: *'Good medical practice thus consisted of knowing the natural complexion of the patient, in establishing which humour or humours were momentarily excessive or deficient in quantity, in matching these findings with the dominant humour of the season, and in deciding how the normal [humoural] balance could best be reestablished'*. Humoural doctrines emphasise the necessity of the physician's knowledge of nature and of *'what the human being is in relation to foods and drinks, and what it is in relation to other practices, and what will be the effect of each thing on each individual'* (Schiefsky 2005: 103).

Apart from the notion of body humours, Foster (1983) and Duffin (1999) observe that humoral medicine moreover incorporates the belief in an essence or life force, *'pneuma'*, sustaining the body elements. Overall, this idea has been closely elaborated by the Greek medical researcher Galen (circa 130-260 A.D.), who refined the early concept of humoral medicine and assured its supremacy as a medical theory until the 15th and 16th century (*cf.* Foster & Anderson 1978; Duffin 1999). According to Leslie (1976) and Tan (2002), humoral medicine furthermore places human anatomy and physiology in relation to other physical systems advocating not only the equilibrium of body elements but also a balance in nature, society and the universe at large. As Leslie (1976: 4) observes: *'This conception rationalized the relation of men to their environment by making preventive and curative medicine efforts to maintain or to restore cosmic equilibrium'*. In this way, humoral treatment methods focus on the patient as a whole rather than on the type of illness alone, urging physicians to combine devotion to their profession with a general devotion to humanity, while promoting a rather holistic and patient-oriented approach to healing (*cf.* Tan 2002) (2.3).

Placed in a larger context, humoral medicine of Ancient Greece is one of three major, Old World humoral traditions established in medical history. In addition to Greek humoral medicine, also known as the Mediterranean or Hippocratic-Galenic tradition, a considerable number of scholars argue that Traditional Chinese Medicine (TCM) and the Ayurvedic Tradition of India are similarly based on humoral theories and include the notion of an essence or life force (*cf.* Leslie 1976; Lewis & Elvin-Lewis 1977; Foster 1987; Farnsworth & Soejarto 1991; Plotkin 1991; Tan 2002). Redfield (1956) characterises the Mediterranean, the South-Asian and the Chinese medical traditions as *'great traditions'*, thereby contrasting them to the numerous *'little traditions'*, which developed following the separation of culture into hierarchic and lay structures. In particular, Redfield (1956) distinguishes between autonomous societies in which all members follow the *'great tradition'* of one and the same community and peasant societies in which an elite community emerged resulting in the division of *'great'* and *'little traditions'*, which are nevertheless interacting and interdependent. Highlighting the interrelationship between *'great'* and *'little traditions'*, *'great traditions'* have frequently originated in *'little'* communities, which in turn may have contributed to the development and subsequent hegemony of the *'great tradition'* (*cf.* Redfield 1956). As Slikkerveer (1990: 58) concludes: *'Great and little medical traditions function alongside and in conjunction with one another and there is a certain amount of interdependence between them'*. As noticed by Redfield (1956), *'great traditions'* are maintained by a reflective few and are cultivated in institutions, such as schools by philosophers, theologians or literary men. On the other hand, *'little traditions'* are preserved by the unreflective, uneducated many and are largely taken for granted instead of being subject to

cultivation (cf. Redfield 1965). Foster & Anderson (1978) and Foster (1983) elaborate that the 'great traditions' of humoral medicine are primarily characterised by a naturalistic perception of health and illness, whereas 'little traditions' widely adopt a personalistic perception of health and illness, thereby stressing the overlap of both conceptualisations.

While the origin of humoral medicine according to Foster (1987) cannot precisely be identified, Leslie (1976) claims that the three humoral traditions - the Hippocratic-Galenic Tradition, Traditional Chinese Medicine (TCM) and the Ayurvedic Tradition - have been in contact with each other throughout history and share general features of social organisation and theory albeit maintaining their individuality. Through the studies of Galen, Greek humoral medicine, for example, has been translated into Arabic and transmitted to oriental Christians and Moslems, thereby providing a sound basis for the subsequent development of Arabic humoral medicine. Following historical movements of warfare and migration, Greek humoral medicine eventually came in contact with the Ayurvedic Tradition of India. Leslie (1976) argues that Ayurveda had been known in the Mediterranean Region long before the translation of Greek texts into Arabic at the time of Galen. Cited in Schiefsky (2005: 75), Hippocrates himself observed that: '[...] *medicine has long since had everything it needs, both a principle and a discovered method, by which many admirable discoveries have been made over a long period of time and those that remain will be discovered, if one who is adequate to the task and knows what has been discovered sets out from these things in his investigation*'.

Greek humoral medicine expanded widely following the spread of Islam and attracted the interest of many scholars, such as Avicenna (circa 980-1037 A.D.). Translations of the original and Arabic texts came to form the basis for medieval Christian medicine (cf. Foster 1987). As Foster (1987: 361) describes: '*From the writings of Christian physicians during this half millennium we see that Hippocrates, Aristotle, Galen and Avicenna and other Moslem physicians were the principal sources of medical theory and practice, with [humoural] doctrine remaining essentially unchanged*'. By consequence, Foster (1987) also observes that traces of humoral medicine, transferred from the elite to the popular culture and often wrongfully dismissed as part of local traditions, are also found among medical practices employed in present-day Latin America. Parallels between classical and contemporary forms of humoral medicine include the principle of opposites, the intensity of humoral values in terms of degrees of hot and cold qualities, as well as names of illnesses and therapies (cf. Foster 1987). Known as Greco-Arabic or *Unani-Tibb* medicine, whereby '*Unani*' describes the Arabic word for Ionian referring to the region of Ionia in Asia Minor, the medical tradition later spread from Asia Minor as far as into Malaysia, India, Indonesia and the Philippines and is also practiced to this day on the Indo-Pakistan subcontinent (cf. Leslie 1976; Foster & Anderson 1978; Said 1983; Farnsworth & Soejarto 1991).

In this respect, Leslie (1976) stresses that medical theories of Southern Asia have had a limited impact on the development of Arabic medicine, which in turn reveals a strong Galenic character. Claiming that the doctrines of humoral medicine played a dominant role in Europe until the 17th century, Foster & Anderson (1978: 59) highlight that the texts remained: '*influential at the popular level until well into the nineteenth century in the form of herbals and home remedy books*'. Although humoral medicine has since been enthroned by a worldwide expansion of modern medical science coupled with professional associations, remnants of the ancient theory can to this day be found among the medical practices of various communities worldwide (cf. Leslie 1976; Foster & Anderson 1978). As noticed by Foster & Anderson (1976: 56): '*Contemporary [medical] systems resemble each other in an important historical sense: the bulk of their explanations and practices represent simplified and popularized legacies from the "Great Tradition" medicine of ancient classical civilizations, particularly those of Greece, India, and China*'. Leslie (1976: 8) similarly argues that: '*[although] cosmopolitan medical institutions exist in every country, most people alive today continue to depend on [humoural] theories and practices*'.

In view of the development and spread of humoral medicine throughout history, Leslie (1976) finds that practitioners of humoral medicine have, however, continuously practised alongside local, non-humoral healers, such as bone-setters, surgeons, midwives or shamans, who advocate a primarily personalistic conceptualisation of health and illness. As noticed by Foster & Anderson (1978), personalistic and naturalistic perceptions of illness are never mutually exclusive but provide an array of possible explanations for the causes of illness based on supernatural as well as natural ideas. While historical records on primarily naturalistic conceptualisations of health and illness can be traced back to the time of Hippocrates, recent anthropological studies have revealed a similar long-term existence of predominantly personalistic ideas about health and illness (cf. Foster & Anderson 1978). DeHart (1999: 379) claims that the survival or traces of ‘great’, humoral as well as ‘little traditions’: ‘[...] *could only be expected in a realm of human activity, namely the healing craft and medicine, which unlike philosophy or speculative cosmology, has deep roots in human praxis and ritual*’. Foster (1987) observes that contemporary remnants of humoral medicine are largely based on naturalistic concepts of health and illness but do not account for culturally diverse perceptions and worldviews. Hereafter, Foster (1987: 382) notes that: ‘[...] *all classical [humoral] medical systems - Graeco-Persian, Ayurvedic, and Chinese alike - have followed a common pattern of simplification from a complex literate to a less complex nonliterate cultural domain that has largely and usually entirely eliminated the Wet-Dry dichotomy*’. Distinguishing between the theory and content of medical doctrines, contemporary forms of humoral medicine refer primarily to specific remedies and practices instead of medical theories at large (cf. Foster 1987). Leslie (1976) observes that in contemporary Asia, for instance, ‘great traditions’, which resemble each other in terms of organisation of practices formulated on the basis of physiological and cosmological concepts, co-exist with ‘little traditions’ as well as with modern forms of medicine. In view of the origin of humoral medicine in Ancient Greece, it is to be expected that contemporary concepts of health and illness, which have initially been developed in Greece, still incorporate remnants of the ‘great’ and ‘little tradition’ of humoral medicine.

2.1.2 Between Indigenous and Cosmopolitan Medicine

In order to identify the interplay between ‘great’ and ‘little medical traditions’ and forms of medicine based on modern scientific research, the present study builds on a distinction made between the concepts of traditional and modern medicine. Following its recent Traditional Medicine Strategy 2002-2005, the World Health Organisation (WHO) (2002) proposes a working definition for ‘traditional medicine’, described as a comprehensive entity, which covers diverse knowledge systems, practices, approaches and beliefs. As WHO (2012) explains more recently: ‘*Traditional medicine is the sum total of the knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness*’. Incorporating various therapies directed at the treatment and prevention of disease, as well as at the promotion of health, WHO (2002a) makes a distinction between: traditional medication therapies, such as plant-, animal- and mineral-based medicines; and traditional non-medication therapies, including spiritual therapies, manual techniques and exercises.

On the whole, the concept of traditional medicine is closely linked to the idea of Indigenous Knowledge Systems (IKS), which follows the definition of ‘indigenous’ by Warren, Slikkerveer & Brokensha (1995) as a distinct body of knowledge unique to a given culture or society and stands in contrast to the system of international knowledge generated through a network of research institutes. In particular, IKS in the health sector have been referred to as *Indigenous Medical Knowledge Systems* and have been defined as empirical and sacred frameworks for understanding health and healing, which include a specific cosmovision as well as a perceived order in nature (cf. WHO *et al.* 1993; Warren, Slikkerveer & Brokensha 1995; Balick & Cox

1996; Hanepen 1997; Bodeker 1999; WHO 2002a). Bannerman *et al.* (1978; 1983) explain how most medicine until the beginning of the 19th century can be defined as traditional medicine referring to practices, which are largely culture-specific and existed long before the application of modern scientific experiment and statistical validation to medical theories. According to Slikkerveer (2006: 2): '*Traditional medicine in terms of a culture-bound body of indigenous medical knowledge, belief and practices has provided the primarily plant-based foundation for many ethnomedical systems which already existed long before the development of "scientific" or cosmopolitan medicine*'. Overall, traditional medicine is embedded in the history, personal attitudes and philosophy of a specific community and incorporates both systems of humoral and indigenous medicine (*cf.* WHO 2002a).

In contrast to traditional medicine, various scholars relate the development of modern medicine to various historical processes, including: the scientific revolution and subsequent expansion of modern science; the development of new medical specifications and techniques questioning ancient doctrines; the formation of professional practitioner associations and government agencies in relation to health care; and the introduction of licensed education and the establishment of research institutions (*cf.* Leslie 1976; Canary 1983; Duffin 1999). As noticed by Warren, Slikkerveer & Brokensha (1995), processes of medical professionalization have resulted in the formation of an international knowledge system, which stands in contrast to the concept of IKS. Leslie (1976), Lewis & Elvin-Lewis (1977) and Duffin (1999) argue that modern medicine has been formally separated from religion during the 16th century whereupon great advances in new therapeutic effectiveness have been made not only through the introduction of germ theory and new surgical techniques in the 19th century but also through the introduction of chemotherapy in the 20th century. Bannerman *et al.* (1978; 1983) observe that the introduction of medical techniques, which subjected all assumptions to experiment and statistical validation, have resulted in certain - costly - health care improvements in mainly industrialised countries, particularly regarding the treatment of infections, poisonings and injuries and the promotion of nutritional and hygiene standards. Canary (1983) notes that the doctor-patient relationship experienced a general shift towards patterns of interaction between patients and groups of professional physicians and pharmacists, which are dominated by the general availability of pharmaceutical medicines.

Because of its close relationship with modern scientific discoveries and the expansion of modern science with an initial geographical concentration in Western Europe, the concept of modern medicine has elsewhere been referred to as scientific, cosmopolitan, Western, allopathic, biomedical or conventional medicine (*cf.* Warren, Slikkerveer & Brokensha 1995). Leslie (1976) argues that the concept of scientific medicine can be rather misleading, since certain aspects of medical professionalisation, such as research funding, hospital administration or improved doctor-patient relationships, are not rooted in scientific theory. The author moreover criticizes the tendency of dismissing all medical doctrines outside the scope of modern medicine as 'unscientific'. As Leslie (1976: 7) claims: '*They involve the rational use of naturalistic theories to organize and interpret systematic empirical observation*'. While agreeing on the concept of 'cosmopolitan medicine' to describe medical theories based on scientific research and professional associations, as they have been established in Europe by the end of the Middle Ages, Leslie (1976) moreover renounces the concept of Western medicine, which relies on a rather neo-colonial worldview, which excludes highly industrialised countries, such as Japan. The author also argues that the term 'modern medicine' involves a negative dichotomy between modernism and traditionalism whereupon the latter is perceived as a static and unchanging concept although traditional forms of medicine have largely been subject to change throughout history. Nevertheless, since 'modern medicine' - also known as 'cosmopolitan medicine' - presents the most appropriate antonym to the concept of traditional medicine, the term is used in this study to describe the universal medical system, which is based on an international knowledge system as well as on the roots of the 'great tradition' of humoral medicine, some of which have been absorbed by universal medical doctrines.

In view of the distinction made between the concepts of traditional and modern medicine, various scholars argue that the relationship between traditional and modern medicine has been rather uneven (*cf.* Buschkens & Slikkerveer 1982; Bannerman *et al.* 1983). In general, Bannerman *et al.* (1983) and WHO (2002a) indicate that the relationship between modern and traditional medicine usually takes one of the following forms: (1) *monopolistic*: largely dominated by modern medicine; (2) *tolerant*: dominated by modern medicine but some traditional practices are tolerated by law; (3) *parallel* or *inclusive*: dominated by both forms of medicine without interaction or integration; (4) *integrative*: dominated by both forms of medicine, as they interact and merge in medical education.

Throughout history, the relationship between traditional and modern forms of medicine has been characterised by minimal interaction and a general dominance of modern medical doctrines. Closely linked to socio-economic developments, modern medicine came to partly replace traditional practices and to enjoy a high status as ideal medical science across various industrialised societies, specifically until the mid-20th century. Highlighting the situation of communities, which have continued to rely on traditional forms of medicine, Bannerman *et al.* (1983) argue that modern forms of medicine have often been imposed on population groups by colonial administrators or by individuals educated abroad and have hereafter been restricted to a certain level of the society. Buschkens & Slikkerveer (1982) similarly observe that the introduction of modern medicine to indigenous communities have frequently resulted in a general ban of traditional forms of medicine in urban areas and a subsequent restriction of modern forms of medicine to the local elite. Consequently, the majority of rural population groups mostly living in developing countries have continued to rely heavily on traditional forms of medicine (*cf.* Buschkens & Slikkerveer 1982).

Despite the general dominance of modern medicine, those societies, which have primarily been relying on modern forms of medicine, however, soon had to cope with certain limitations of the modern medical system. The modern medicine's apparent failure to cure new cultural diseases, such as chronic diseases, allergies, mental or emotional disorders, often associated with the growing costs of modern forms of treatment, the experience of adverse effects of pharmaceutical medicines, the recently increased public access to health information and a general change of social values have triggered a general search for alternative solutions as well as a popular movement of 'back to the nature' in health and healing (*cf.* Bannerman *et al.* 1978; 1983; Brelet *et al.* 1983; Zhang 1998; WHO 2002a; Slikkerveer 2006). Astin (1998: 1548) identifies three possible theories in order to explain the increased use of alternative forms of medicine:

1. *'Dissatisfaction: Patients are dissatisfied with conventional treatment because it has been ineffective, has produced adverse effects, or is seen as impersonal, too technologically oriented, and/or too costly.'*
2. *'Need for personal control: Patients seek alternative therapies because they see them as less authoritarian and more empowering and as offering them more personal autonomy and control over their health care decisions.'*
3. *'Philosophical congruence: Alternative therapies are attractive because they are seen as more compatible with patients' values, worldview, spiritual/religious philosophy, or beliefs regarding the nature and meaning of health and illness.'*

As the result of changes in attitude towards the credibility and use of alternative forms of medicine, the concept of 'Complementary and Alternative Medicine (CAM)' has gained increased recognition by a growing number of publications on the topic in various North American medical journals by the end of the 1990s, which highlighted the fall of the 'Bamboo Curtain' between modern, conventional medicine and CAM in the United States (*cf.* Weeks 2001; Quah & Slikkerveer 2003; Slikkerveer 2006). As Slikkerveer (1990: 13) notices: '*[In] Western Europe and the United States - mainly because of unease about technocratic,*

“impersonal” treatment, over-medicalisation and the staggering cost of the biomedical system - people have resorted to “alternative” therapies such as homeopathy, herbalism, natural healing and holism of the “new era” [...].

Although the official outline of WHO (2002a) reveals a general tendency towards merging the concept of CAM with the concept of traditional medicine, the term largely disagrees with both traditional and modern medicine, as it generally refers to medical practices lying outside the scope of indigenous and international knowledge systems. WHO (2002a) argues that the term CAM is: *‘used to refer to a broad set of health care practices that are not part of a country’s own tradition, or not integrated into its dominant health care system’*. In the same fashion, Slikkerveer (2003) notes that CAM incorporates foreign philosophies of health and healing, therapies and professionals, which provide alternatives to modern medical doctrines. Ernst & Dixon (2004: 308) similarly define ‘complementary medicine’ as: *‘diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, by satisfying a demand not met by orthodoxy or by diversifying the conceptual frameworks of medicine’*. WHO (2002a) claims that CAM is largely based on a holistic approach to medicine, which emphasises a person’s health at large, rather than illness alone. Eisenberg *et al.* (1993) and Astin (1998) describe the concept of unconventional, alternative medicine in the United States as medical practices, which are not in conformity with the official standards of a country’s medical community and are generally not taught at Medical Schools or available at hospitals. In particular, complementary and alternative forms of medicine incorporate a wide spectrum of self-help therapies, such as acupuncture, homeopathy or chiropractic, as they are indigenous to certain cultures but have spread across other countries to varying degrees. By consequence, they lie outside the scope of orthodox medical doctrines (*cf.* WHO 2002a; Slikkerveer 2003; Ernst & Dixon 2004). According to Astin (1998: 1549), the concept of CAM in the United States includes: *‘acupuncture, homeopathy, herbal therapies, chiropractic, massage, exercise/movement, high-dose megavitamins, spiritual healing, lifestyle diet, relaxation, imagery, energy healing folk remedies, biofeedback, hypnosis, psychotherapy and art/music therapy’*.

Following the growing interest in CAM towards the end of the 20th century, Weeks (2001) observes that physicians, as well as health care and research institutions have since begun to integrate certain forms of CAM into their services in an attempt to increase the accessibility of alternative therapies and to create more effective and cost-effective health care. Forms of CAM have been appreciated for the quality of care offered by providers of CAM and for the relatively low perceived risks, which are associated with CAM-therapies (*cf.* WHO 2002a). As Slikkerveer (2006: 10) explains: *‘As such, [CAM] refers basically to the integration of alternative therapies (herbal medicine, chiropractic, acupuncture, homeopathy and massage), alternative professionals practising these disciplines, complementary self-help strategies, as well as alternative philosophies of health and healing such as energetics, spirituality and distant healing’*.

In addition to the search for alternative solutions among societies, which largely rely on modern medicine, Slikkerveer (2006) observes a general, worldwide development towards the integration of modern and traditional medicine. Likewise, Cotton (1996) highlights that academic interest and research into traditional forms of medicine have emerged during the 1970s whereupon organisations, such as WHO, have begun to support the integration of traditional and modern medicine. Overall, a more recent focus on this new concept of integrative medicine can be explained as a result of a number of phenomena, which have been summarised by Slikkerveer (2006: 7) as: *‘green consumerism and the resurgence of interest in the use of “naturals” in developed countries; the free market economy bringing in more openness and expanding markets and demand for new resources and products; growing acceptability of the social responsibility of minimizing socio-economic inequalities in favour of rural people; poor economic conditions in developing countries rendering an increased reliance on local plant-based medicines; increasing awareness regarding biodiversity conservation and sustainable and protective use of plant resources; and the search for new phytopharmaceuticals for the prevention and cure of deadly*

disease such as Cancer and HIV/AIDS. In this respect, ‘phytopharmaceuticals’ have been defined as plant-based remedies, of which the safety has been proven by experimental science (*cf.* Slikkerveer 2003). Within the realm of integrative medicine, modern scientific research has also been applied to traditional forms of medicine in terms of, for example, providing information on the description, ethnopharmacology, usage and dosage as well as toxicity and side effects of plant-based medicine. Since research into traditional plant-based medicine has continued to provide a considerable impetus towards the development of industrial pharmaceutical medicines, forms of collaboration and information exchange between the concepts of traditional and modern medicine have been proven rather indispensable (*cf.* Canary 1983; Plotkin 1991; Cotton 1996; Slikkerveer 2006).

As mentioned in Chapter I, the interpretation of the concept of integration in health care as to encompass the integration of traditional, transitional and modern medical systems is postulated by several scholars, including Leslie (1976), Bannerman *et al.* (1983), Slikkerveer (1990), Warren, Slikkerveer & Brokensha (1995), Cotton (1996), Barlett *et al.* (2003), Slikkerveer (2003), Ambaretnani (2012) and Chirangi (2013), and as such provides the leitmotif for the present study. In line with such conceptualisation, WHO (2002a: 5) recently developed its *WHO Traditional Medicine Strategy 2002–2005* in which this meaning of the concept of integration is operationalised by: ‘*facilitating integration of TM/CAM into national health care systems by helping Member States to develop their own national policies on TM/CAM.*’

As indicated above, this interpretation of integrated health care in a situation of medical pluralism is different from the views of a number of scholars, such as Gröne & Garcia-Barbero (2001), Lloyd & Wait (2005) and Lionis *et al.* (2009), who focus on the integration of various components in the organisational structure and staff of the modern medical system in order to promote health and improve management and patient satisfaction by aiming at the optimal level of quality, accessibility, cost-effectiveness and participation in modern health care. This approach is similarly promoted by WHO (2008a), whereby integrated service delivery is defined as: ‘*the organization and management of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money.*’

2.1.3 The Revival of Herbal Medicine

In general, plant-based forms of medicine have provided an essential component of medical treatment to population groups since the earliest days of human settlement. While medicinal plants have been subject to international trade networks and markets since the Renaissance, plant-based or herbal medicine has recently become a renewed element in modern scientific research, which is conducted on the medical properties of plants (*cf.* Farnsworth & Soejarto 1991; WHO *et al.* 1993; Balick & Cox 1996; Slikkerveer 1999b; Zhang 1998)

Cited in Slikkerveer (2006), De Padua *et al.* (1999) differentiate between the following types of herbal medicine: (1) traditional medicine, which refers to the utilisation of indigenous medicinal plants in their country of origin; (2) herbal medicine, which refers to the cultivation and preparation of indigenous medicinal plants for external sale; and (3) pharmaceutical medicines, which refer to medicinal plants forming active components in pharmaceutical products. On the other hand, Zhang (1998) defines ‘plant-based’ or ‘herbal medicine’ as any plant, namely herb, shrub, tree or fungus, which is used alone or in combination with other plants for the purposes of health restoration and maintenance. In general, the concept of herbal medicine includes raw and processed plant materials with therapeutic or other human health benefits, as well as specific medicinal herbal products. The concept, however, excludes plant materials, which have already been identified as active components through modern scientific techniques and have been isolated or synthesized as chemical ingredients (*cf.* Zhang 1998; WHO 2002a).

According to WHO (2012), active components refer to ingredients with therapeutic activity, whereby, provided that a particular ingredient cannot be identified, the whole plant is seen as an active component. Skoula & Johnson (2006) argue that at times the active component remains unknown the medicinal significance of plants is ascribed to something larger than the active components, namely to a synergy of components, which may have a stronger effect than the sum of individual components of the plant.

As regards the use of herbal medicine as part of traditional medicine, *i.e.* in the form of indigenous medicinal plants, Strataridaki (1988) observes that sources, which reveal the practices of divination and healing employed by Asclepius, include an account on the application of plant roots as medicine. In this way, it is suggested that the tradition of healing in Ancient Greece was based on the utilisation of plants. Hoffmann (1983) and Zhang (1998) similarly argue that indigenous communities and scholars of humoral medicine alike have used plants on the basis of their healing properties. Duffin (1999) documents that Hippocratic doctrines describe more than 300 mainly plant-based remedies for internal and external as well as dietary applications, whereby the healing power of nature is embraced as a means to support the human body in its attempt to heal itself. The Greek philosopher Theophrastus (circa 371-287 B.C.), presumably the author of at least 13 medical treatises and other medical-physiological works, highlights the medical properties of plants within his work (*cf.* Fortenbaugh *et al.* 2003). Despite the limited initial success and a small number of surviving texts, Fortenbaugh *et al.* (2003) underscore the importance of Theophrastus' studies on topics, such as sweat, dizziness, fatigue, fainting and paralysis, which have been discussed in the Hippocratic texts and have had a considerable influence on later doctrines, such as the writings of Galen. Similarly influential to the work of Galen, Pedanius Dioscorides (circa 40-90 A.D.) has accentuated the medical properties of plants in his extensive, five volumes publication on medicinal substances (*cf.* Duffin 1999). As Iatrou & Kokkalou (1997: 67) confirm: '*It is to Theophrastus that we owe the classical theories on the medicinal uses of the wild plants, and it is also well known that Dioscorides had studied, recognised, and classified more than 500 wild plants that had effects on several different illnesses of the human body*'. Lewis & Elvin-Lewis (1977) similarly maintain that Hippocrates, Galen and Dioscorides alike have made significant contributions to the study of the utilisation of plants for medical purposes.

Among the scholars of Ancient Greece, Dioscorides is to this day widely regarded as the 'Master of Ancient Herbalism and Contemporary Pharmacology'. Scarborough (2005: xiii) calls Dioscorides' publication on medical substances: '*the most influential work in the history of the medical sciences to emerge from the early days of the Roman Empire*'. Practising the profession of a physician, pharmacist and botanist, Dioscorides travelled extensively in the Roman Empire with the army of emperor Nero collecting samples and information on medicinal plants along the way. On the whole, Dioscorides identified more than 600 plants, animals, minerals and other derivatives, which he organised on the basis of their physical qualities by categorising them as oils, animals, cereals, herbs, roots and wines. He also described the way in which these remedies act in the human body and documented their specific manufacturing processes (*cf.* Duffin 1999; Beck 2005; Scarborough 2005). According to Beck (2005: xxiii), Dioscorides described each plant thoroughly in terms of: '*[Morphology], habitat(s), relative qualities, methods of preparation, general properties and specific therapeutic applications, adulteration, compounding and directions of storage*'. Pollio *et al.* (2008) confirm that the famous work of Dioscorides *Materia Medica* forms an entire encyclopaedia of natural, particularly vegetal, mineral and animal products. Beck (2005) notes that, since the properties of plants are essential to the treatment and prevention of illness, the grouping of substances on the basis of their therapeutic properties instead of presenting them in alphabetical order renders it easier to remember the remedies and to find possible substitutes for a particular plant.

Within his writings, Dioscorides moreover emphasised the crucial role played by the professional physician, who is expected to acquire knowledge of medicinal plants in all variations from the sources of ethnobotany as well as from personal experience, and criticised

the fact that numerous medicinal plants remain unnoticed by herbalists and physicians alike (*cf.* Dioscorides & Beck 2005; United States National Library of Medicine 2012). Cited in Dioscorides and Beck (2005: 3), Dioscorides claims that: '*[it] is perhaps clear to everyone that there is a great need for a treatise on pharmacology, which, coupled with the entire art of healing, provides by itself in every section an invincible ally*'. As Scarborough (2005: xiv) confirms: '*Dioscorides establishes a pharmacology firmly resting on empirical data, but suggesting that such facts could change as the practitioner added his own experiences in the field and with patients*'. In his publications, Dioscorides elaborated whether he had tested or simply heard about the remedy in question, whereby he recorded a considerable amount of traditional, popular knowledge (*cf.* Dioscorides & Beck 2005). Gunther (1959), Duffin (1999) and Scarborough (2005) observe that the writings of Dioscorides have not only been translated from Greek into Latin and several other languages, but have also remained a living source of information for herbalists well until the 19th century. Duffin (1999) notes that research into the writings of Dioscorides continues to this day, as interest in his work has survived for many centuries not at least because of what Beck (2005: xxii) summarizes as: '*new discoveries in phytochemistry*'; '*modern studies in ethnobotany*'; '*researches into the curative practices of people all over the globe*'; '*the rise in the attention given to the ancient pathologies*' and '*the ever increasing appeal of natural remedies*'.

As a result of pre-Renaissance contacts of European scholars with indigenous communities as well as the revalidation of the classical Greek medical texts during the Renaissance, herbal medicine received growing scholarly attention, which ultimately resulted in the development of academic disciplines, such as ethnobotany and pharmacology (*cf.* Slikkerveer 2006). Balick & Cox (1996), Beck (2005) and Scarborough (2005) relate a growing scholarly interest in plant-based medicine to the rediscovery of Dioscorides' work during the Renaissance, which resulted in the publication of 'herbals', being often illustrated manuals, which describe the names and uses of medicinal plants. These herbals marked the beginning of the empirical study of traditional medicine as they include significant information on traditional remedies and a botanical description of medicinal plants (*cf.* Lewis & Elvin-Lewis 1977; Cotton 1996). Lewis & Elvin-Lewis (1977) and Duffin (1999) observe that these herbals continued to form an integral part of medical education, which lasted well until the 19th century. As a result, physicians, universities and hospitals started to design botanical gardens for the purpose of research as much as for the use and development of remedies.

The fascination for medicinal plants declined at the beginning of the 19th century following the spread of modern scientific discoveries made in medical theory and technology. Nevertheless, the use of plant-based medicine has remained increasingly popular, particularly in rural areas and in developing countries, largely because of their affordability, easy accessibility and cultural embeddedness. Furthermore, the growing disappointment of the failure of modern medicine to provide adequate and affordable treatment for specific diseases has also generated a renewed interest in herbal medicine, not only in developing countries but also in countries, which primarily rely on modern medical treatment. Herbal medicine, which is widely perceived as a safe form of medical treatment, has been identified as an integral and rapidly growing element of CAM, which has recently acquired a strong dimension on the world market (*cf.* Eisenberg 1993; WHO *et al.* 1993; Zhang 1998; WHO 2002a; Slikkerveer 2006; Lynch & Berry 2007; WHO 2012).

Slikkerveer (2003; 2006) also mentions that alternative philosophies of nature and the environment as well as the indigenous health and healing practices, which generally underlie the application of herbal medicine, have also contributed to the growing worldwide popularity of plant-based medicine today. Known as 'holistic herbalism', the use of herbal medicine re-establishes the relationship between humans and the natural environment, as it has long provided a basis for medical treatment and allows for treatment methods within the framework of the patient's social and spiritual environment (*cf.* Slikkerveer 2006). Hoffman (1983) argues that humans are exposed not only to the natural, external environment but also to the physiological,

internal environment, whereby herbal medicine can function as a mediator between ecology and physiology, while keeping both environments in harmony. As Hoffmann (1983: 18) explains: '[Herbal] medicine in its holistic sense recognizes humanity as an expression of life, enlivened with life force, and herbs can work with this whole being, not just specific symptoms'. Zhang (1998) and WHO (2012) indicate that the recent interest in herbal medicines is based on an overall demand for: crude plants; herbal materials, such as essential oils; herbal preparations in the form of extracts and tinctures; as well as herbal products, which are not composed of chemically defined substances. In view of the continuing quest for alternative forms of medical treatment, the contemporary enthusiasm about herbal medicine is generated by the widely recognised necessity for pharmaceutical research conducted on plant-based remedies (*cf.* Zhang 1998; WHO 2012). Cotton (1996) and Duffin (1999) observe that a growing worldwide request for alternative forms of medicine and a general demand for new pharmaceutical medicines have further promoted the need for scientific research on plant-based medicines.

2.2 The New Field of Ethnoscience

2.2.1 Ethnobotanical Knowledge Systems (EKS)

In general, modern scientific research into IKS developed on the basis of an early scholarly interest in the exotic and unknown, was followed by a colonial and post-colonial concern about 'primitive' people and resulted in the rediscovery of IKS for romantic reasons, not at least because of a growing disappointment in modern science during the second half of the 20th century (*cf.* Ellen & Harris 1999; Slikkerveer 1999b). In particular, Slikkerveer (1989; 1999) observes that early research on IKS has been conducted during the 1950s and 1960s within the realm of the disciplines of *ethnoscience* and *cognitive anthropology* and produced detailed accounts in fields such as *ethnolinguistics* and *ethnopsychology*. In this respect, Martin (2004) explains that the prefix 'ethno-' has been attached to a variety of disciplines in an attempt to highlight the scholarly focus on the study of local people's perceptions of indigenous and international knowledge systems in various sectors of the society. Nevertheless, early ethnoscientific studies focussed largely on an idealised image of communities described by local informants, but tended to overlook the practical aspects of the community members' daily struggle for life. In order to overcome certain shortcomings and to enable a value-free form of evaluation of IKS in scientific terms, ethnoscience has since acquired a new dimension of research, which goes beyond a mere qualitative interpretation of IKS but includes quantitative, comparable data. Later onwards, IKS became the subject of research conducted to develop a new direction towards a new discipline, known as *new* or *neo-ethnoscience*, sometimes also called the '*new ethnography*'. (2.4). The second generation of ethnoscientists advocate an 'Ethnosystems Approach' to the study of IKS, which centres on the study of principles and ideas underlying human behaviour, rather than on empirical observation, thereby relating IKS to the dynamic process of socio-economic development (*cf.* Slikkerveer 1989; Slikkerveer & Dechering 1995; Slikkerveer 1999b).

Slikkerveer (1989:19) defines 'ethnosystems' as: '[...] *those sets of conceptions and practices which are specific to an ethnic group and generally localized in rural peripheries, as opposed to centralized, urban systems often origination in [modern societies]*'. In this way, Slikkerveer (1989) and Slikkerveer & Dechering (1995) moreover explain that 'ethnosystems', as opposed to cosmopolitan systems or 'cosmosystems', go beyond the general understanding of indigenous knowledge systems to encompass indigenous, culture-specific concepts, beliefs, perceptions and practices, as well as local channels of communication and decision-making patterns. Rooted in people's long-term experience and wisdom, ethnosystems provide a sound basis for establishing particular patterns of behaviour in relation to various sectors of the society, such as linguistics, education, medicine, agriculture, artisan skills, as well as kinship and social structures, while promoting indigenous technology development and innovation. In this way, the 'Ethnosystems

Approach' broadens the earlier perspective on IKS to include cognitive and behavioural components and to conduct research in a rather holistic manner. The approach allows for a more dynamic assessment of IKS in terms of including: historical processes of transculturation and acculturation; forms of interaction between local and international knowledge systems as well as ethno- and cosmosystems; and processes of socio-economic development (*cf.* Slikkerveer 1989; Slikkerveer & Dechering 1995; Slikkerveer 1999a; 1999b; 2003). Slikkerveer (1989), Ellen & Harris (1999), Slikkerveer & Dechering (1995) and Slikkerveer (1999b) argue that the rather behaviouristic 'Ethnosystems Approach' to the study of IKS adopts a bottom-up approach, which is largely based on participation among the population under study and focuses on the cultural dimension of development in the context of international cooperation, thereby advocating a strategy of 'development from below'. Slikkerveer & Dechering (1995: 436) identify the following five principles behind the study of ethnosystems:

1. *'the (pre)historical assessment of a particular community or society in its natural and cultural setting;*
2. *the culture-specific or culture-bound reference of the term;*
3. *the holistic approach towards the inclusion of a range of sub-systems of knowledge and technology in sectors such as medicine, agriculture, environment, education, and so on;*
4. *the more dynamic assessment of the concept of "culture" in terms of a configuration of interacting [international] and [indigenous] knowledge systems;*
5. *the comparative - instead of a normative [...] - orientation towards the development process in certain regions or "culture areas"'*.

In addition, Slikkerveer (1989; 1999) claims that the 'Ethnosystems Approach' to the study of IKS also prompts researchers to adopt an *emic*, *i.e.* an insider's, as opposed to an *etic* or outsider's perspective.

Within the framework of the neo-ethnoscience, various scholars have specialised on the study of IKS in relation to people's rather dynamic and flexible knowledge of the natural environment, thereby introducing concepts such as *Ethnobotanical Knowledge Systems* (EKS) and *Traditional Ecological Knowledge* (TEK) as specific forms of IKS (*cf.* Alcorn 1995; Balick & Cox 1996; Cotton 1996; Slikkerveer 1995; 1998; 1999). Balick & Cox (1996) and Slikkerveer (1999b) report that scholarly interest shown prior to contemporary research in the relationship between humans and nature largely focussed on the exotic and economic values of plants. Cotton (1996) suggests that academic concern about the use of plants in relation to IKS developed in conjunction with research, which has been carried out in indigenous linguistics and communities in general at the beginning of the 20th century. Eventually, studies of the reciprocal relationship between communities and their natural environment have joined with the discipline of *ethnobiology* forming a subfield of *ethnoscience*. Research on EKS and TEK is carried out as part of the field of *ethnobotany*, which is *also regarded* as a subdiscipline of *ethnobiology* (*cf.* Plotkin 1991; WHO *et al.* 1993; Balick & Cox 1996; Cotton 1996; Slikkerveer 1999b; 2003; Martin 2004; Slikkerveer 2006). As Balick & Cox (1996: 33) explain: '*The field of study that analyses the results of indigenous manipulations of plant materials together with the cultural context in which the plants are used is called ethnobotany*'. According to Slikkerveer (2006: 21), the ethnobotanical research approach: '*focuses on the knowledge and use of plant resources within and among different cultures and communities within a particular field of anthropological study*'. Cotton (1996: 2) similarly specifies '*ethnobotany*' as: '*all studies, which concern the mutual relationships between plants and traditional peoples*'. In particular, Balick & Cox (1996) and Slikkerveer (1999b) point out that *ethnobotany* relates to the study of people's use of plant species, particularly in such fields as medicine, food or textile and highlights forms of interaction and mutual dependency between humans and their natural environment. Overall, the field of *ethnobotany* incorporates a variety of subfields, such as: *economic botany*, which refers to the study of the economic value of plants; *applied ethnobotany*, which focuses on the identification

and application of new medicines, which are identified on the basis of IKS; or *ethno-ecology*, which describes people's interactions with their natural environment in a more theoretical and practical sense (cf. Balick & Cox 1996; Cotton 1996; Slikkerveer 1999b; 2003; Marin 2004; Slikkerveer 2006). As Slikkerveer (1999b: 170) indicates, ethno-ecology: '*focuses primarily on the ideas, perceptions and classifications of the environmental relationships of members of a particular community or culture*'. In this respect, Cotton (1996: 17) identifies the following primary areas of ethnobotanical research:

1. *Ethnoecology: [indigenous] knowledge of plant phenology, adaptations and interactions with other organisms; nature and environmental impact of traditional vegetation management;*
2. *Traditional Agriculture: [indigenous] knowledge of crop varieties and agricultural resources; nature and environmental impact of crop selection and crop management;*
3. *Cognitive Ethnobotany: traditional perceptions of the natural world (through the analysis of symbolism in ritual and myth) and their ecological consequences; organization of knowledge systems (through ethnotaxonomic study);*
4. *Material Culture: [indigenous] knowledge and use of plants and plant product in art and technology;*
5. *Traditional Phytochemistry: [indigenous] knowledge and use of plants for plant chemicals for example in pest control and traditional medicine;*
6. *Pelaeoethnobotany: past interactions of human populations and plants based on the interpretation of archaeobotanical remains*'.

Studies carried out in the field of *ethnobotany* towards the end of the 20th century have frequently shed light on the rather marginal role, which was played by IKS, particularly EKS, across mainly rural population groups in developing countries. Leakey & Slikkerveer (1991a) and Slikkerveer (1999b) argue that the expansion of 'scientific' environmental knowledge and the introduction of new crops in many areas have eventually led to decreasing yields and economic loss, as well as to a deadlock in the development of local techniques and practices. As Leakey & Slikkerveer (1991a: 2) note: '*The rather normative proposition towards developing countries to adopt the ideal [modern] standards of life such as cash economy, mechanization and urbanization not only tends to result in a loss of cultural identity of certain "target populations" but eventually could lead to a strong, renewed dependence on the [industrialised] world*'.

Furthermore, Balick & Cox (1996), Posey (1999) and Skoula *et al.* (2003) observe that recent forms of over-investment and over-exploitation of natural resources, primarily caused by increased demand, rapid population growth and habitat destruction, as well as processes of globalisation and cultural erosion aggravated by climate change have contributed to the loss of bio-cultural diversity worldwide. Composed of, on the one hand, the biological diversity of genes, species and ecosystems, and on the other hand, the cultural diversity referring to local, regional and global forms of EKS, bio-cultural diversity is increasingly faced with extinction.

Naturally, these processes highlight the immediate need for solutions in the form of, for example, small-scale agricultural production, sustainable resource management and conservation oriented practices (cf. Leakey & Slikkerveer 1991a; Skoula *et al.* 1997; Bodeker 1999; Posey 1999; Slikkerveer 1999a; 1999b). In response to the growing concern about the loss of bio-cultural diversity, ethnobotanists have begun to apply the results of their research to concepts of sustainability, bio-cultural diversity conservation and community development by means of advocating the importance of local EKS and traditional forms of agriculture, the indigenous knowledge and practice of useful plants and the commitment of returning benefits from research to the communities involved. While numerous anthropologists and ethnoscientists expressed the need for immediate action, international organisations, such as the Food and Agriculture Organisation (FAO) or the United Nations Environment Programme (UNEP), have similarly added concerns about sustainability, conservation and community development to their agenda (cf. WHO *et al.* 1993; Balick & Cox 1996; Griffiee 1997; Heywood 1997a; Skoula *et al.* 1997;

Slikkerveer 1999a; Martin 2004). In view of these developments, various researchers argue that EKS provide a sound basis for the introduction of sustainable forms of ecosystems management and practices of bio-cultural diversity conservation (*cf.* Alcorn 1995; Cotton 1996; Bodeker 1999; Posey 1999; Slikkerveer 1999b; 2003). EKS largely comply with the principles of sustainability, as they are ecologically sound, economically viable, socially just, humane and adaptable (*cf.* Slikkerveer 1999a). As Slikkerveer (1999a: 41) claims: ‘[...] *Small-scale agricultural systems largely based on the indigenous practices and methods do more or less comply to most of these five criteria of sustainability [...]*’. Likewise, Balick & Cox (1996) document that indigenous communities have continuously relied on local forms of EKS, thereby mastering conservation-oriented practices, namely harmonious interventions in nature, not at least out of the necessity to preserve the natural environment as a continuous source of life. Stating that indigenous ecological principles are commonly related to human subsistence and survival, Slikkerveer (1999b: 174) moreover observes that these principles: ‘[...] *include values, norms and beliefs regarding the maintenance of the “balance of nature” which have evolved over generations and which encapsulate specific conservation methods and practices*’.

Reijntjes *et al.* (1992) conclude that indigenous farming systems make a contribution to the conservation of bio-cultural diversity, as they typically share: (1) a holistic worldview, which views farmers as part of nature and involves rituals directed at maintaining the quality of natural resources; (2) practices of community-based farming in which the community preserves the local culture and knowledge, organises labour, designs and controls the use of land and manages change; (3) an optimal use of local resources, which is based on a detailed understanding of the local environment; (4) a reliance on genetic and physical diversity reinforced by the production of natural resources for self-sufficiency instead of market sale; (5) practices of soil protection, water conservation and recycling of natural nutrients; (6) risk minimisation, which is directed at minimising risk rather than at maximising economic output; and (7) site-specific techniques, as they have developed within the respective community. Subsequently, Posey (1999) notes that the *First International Congress on Ethnobiology* held in 1988 in Belém, Brazil, which culminated in the *Declaration of Belém*, strengthened the importance of EKS within the context of bio-cultural diversity conservation (2.5). Griffie (1997) observes that various international programmes and activities directed at the sustainable use of natural resources and at the conservation of bio-cultural diversity have focused on geographical regions, which are particularly rich in bio-cultural diversity (2.6).

As a result of the joint collaboration between Mediterranean Agronomic Institute of Chania (MAICh), the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), the Leiden Ethnosystems and Development (LEAD) Programme of Leiden University and the Directorate General 1 of the European Union, a regional network on the Identification, Conservation and Use of Wild Plants in the Mediterranean Region called MEDUSA has been established by the Department of Natural Products at MAICh in Crete, Greece, during a workshop on the Identification of Wild Food and Non-Food Plants of the Mediterranean Region held in 1996. In view of the long-term use of plants in mythology, tradition and science in the region, the MEDUSA Network has been established on the basis of a general interest in natural products and a growing awareness of the threat of the destruction of the bio-cultural diversity of the region. Skoula *et al.* (2003) explain that the MEDUSA Network aims at recognising, improving and protecting the significance of plants in the Mediterranean Region in sectors such as agriculture, industry and human health. In particular, the objectives of the network include the identification of natural and naturalised plants, the transformation of indigenous knowledge into a scientific database, the establishment of a regional information system and the evaluation of the conservation status and potential agricultural utilisation of plants (*cf.* Skoula *et al.* 2003; Skoula & Johnson 2006). As Skoula *et al.* (1997: 2) note: ‘*The eventual aim of the Network is to propose methods for the economic and social development of rural areas of the Mediterranean Region, using ecologically-based management systems that will ensure the sustainable use and conservation of plant resources of the area*’.

According to Slikkerveer (1999b), the search for solutions directed at reducing the loss of biocultural diversity has frequently been linked to the economic and social development of rural communities. Alcorn (1995: 1) argues that EKS have the potential for designing locally adapted, sustainable agricultural systems, while meeting the following rural development goals: ‘[Improved] rural livelihoods’; ‘sustainable use of the natural resource base’; ‘improved well-being, health and nutrition’; ‘strengthened institutional capacity to meet the needs of rural people’; ‘generation of capital surplus for financing industrialization’. In order to promote sustainable and conservation-oriented strategies of development, Alcorn (1995) and Slikkerveer (1999b) highlight the impetus, which EKS give to participatory research strategies and strengthen the importance of interaction between the holders of EKS and development specialists. Martin (2004) moreover argues that ethnobotanical research is rather interdisciplinary, as it generally involves the combined effort of representatives of various academic fields, such as botanists, linguists and anthropologists. As Balick & Cox (1996: 7) point out: ‘Given this twin focus on plants and indigenous peoples, the ideal ethnobotanist is a combination of anthropologist, archaeologist, botanist, chemist, psychologist, ecologist, explorer, folklorist, pharmacologist and diplomat’. In the same fashion, Leakey & Slikkerveer (1991a) observe that the study of relationships between agriculture, culture and society involves a number of disciplines of which anthropology provides an effective means to study subsistence systems across cultures. As Slikkerveer (1999b: 177) reports: ‘In this way, the role of anthropology and the related “new” perspectives of TEK could assist in multi-disciplinary research of not only the indigenous knowledge systems, but also of the adaptive processes and behavioural patterns which pertain to the sustainable management and conservation of biodiversity’.

2.2.2 Ethnomedicine and Medical Anthropology

Besides ethnobotany, the traditional practices of health and healing, which have been recorded as part of early ethnographic records on IKS, experienced a revitalisation during the second half of the 20th century in the newly-emerging field of *ethnomedicine*, a subfield of *ethnoscience*. Cited in Foster & Anderson (1978: 5), Hughes (1968) defines ‘ethnomedicine’ as: ‘those beliefs and practices relating to disease which are the products of indigenous cultural development and are not explicitly derived from the conceptual framework of modern medicine’. Similarly, Hahn (1995: 77) defines ‘ethnomedicine’ as the ‘society’s cultural reality concerned with sickness and healing’. Slikkerveer (1990) argues that ethnomedical studies largely centre on traditional forms of medicine and systems of indigenous knowledge, practice and belief with regard to health and illness, as they have often been interpreted as ‘illegitimate’ and ‘non-professional’ forms of medicine. In general, *ethnomedicine* has been closely linked to the domain of *medical anthropology*, which similarly originates from an early scholarly interest in traditional forms of medicine (cf. Foster & Anderson 1978). Cotton (1996) notes that *medical anthropology* focuses on the study of the cultural perception, symbolic meaning and social context of illness and also includes the studies of the dissemination of medical knowledge and the role played by traditional health care providers. As Foster & Anderson (1978: 2) comment: ‘In short, *medical anthropology* is viewed by its practitioners as a biocultural discipline concerned with both the biological and socio-cultural aspects of human behaviour, and particularly with the ways in which the two interact and have interacted throughout human history to influence health and disease’. Foster & Anderson (1978) and Slikkerveer (2003) observe that scholars of *medical anthropology* commonly conduct research on a variety of topics, such as human growth and development; the concept of illness in history and evolution; traditional medicine; health and illness behaviour; the doctor-patient relationship; sustainable community development; as well as integration of traditional and modern medical systems. Indicating the close relationship between *ethnomedicine* and *medical anthropology*, Foster & Anderson (1978) relate the origin of the latter to the early interest of physical anthropologists in topics such as evolution, adaptation,

comparative anatomy, racial types, genetics and serology. In a comparable way, *ethnomedicine* became part of the ‘culture and personality’ movement of the late 1930s and 1940s; and the international public health movement, which occurred after the Second World War (2.7).

According to Foster & Anderson (1978), Foster (1983) and Slikkerveer (1990), ethnomedical research and medical anthropology both engage in comparative, particularly cross-cultural and cross-temporal, studies of bio-ecological and socio-cultural factors, which influence concepts of health and illness. Furthermore, these studies aim at understanding patterns of behaviour related to illness treatment and at improving health care delivery across population groups. In this respect, Slikkerveer (1982; 1990) observes that early research conducted on socio-cultural determinants of concepts of health and illness, which emerged during the 1950s and 1960s, have resulted in an initial over-emphasis on traditional forms of medicine. In line with the establishment of bi- and multilateral public health programmes and organisations, such as WHO, in the aftermath of the Second World War, medical anthropologists and sociologists have frequently been consulted about their knowledge of socio-cultural factors influencing health and illness with a view to design strategies for the improvement of health care delivery services. According to Foster & Anderson (1978), it had become clear that solutions to counteract the inefficiency of health care services, primarily in developing countries, had to be found within the wider socio-cultural context of health and illness of the population groups concerned, rather than on the basis of modern medical doctrines. Thereafter, ethnomedical studies started to pay increased attention to institution-based patterns of the health care seeking processes (*cf.* Foster & Anderson 1978; Slikkerveer 1990; WHO 2012). As Slikkerveer (1982: 1860) indicates: ‘*Within this context, it is worth noting that despite decades of frequent and productive fieldwork, applied anthropologists in developing countries as well as health planners and administrators have gradually become aware of the fact that the rather isolationistic interest in either traditional medicine, or [...] in cosmopolitan medicine has not yet resulted in a balanced health development process*’. Slikkerveer (1990) moreover claims that the phenomenon of dual use of both traditional and modern forms of medicine promotes a dichotomy between traditional and modern concepts, whereby the possible existence of other medical configurations are overlooked.

Recent ethnomedical research has focussed on the transcultural utilisation of different, socio-culturally shaped, medical systems in a particular culture area and on the utilisation of specific forms of medicine, such as medicinal plants, among different culture areas (*cf.* Slikkerveer 1990; 2003). Slikkerveer (1982; 1990) argues that recently, more approaches in ethnomedical research have largely centred on the utilisation of modern medicine by different population groups in industrialised societies, as well as on the utilisation of traditional and modern medicine by different population groups in developing societies, thereby attempting to bridge the gap between ethnomedical and modern biomedical doctrines. Ethnomedical studies conducted during the 1970s have moreover focussed on local disease aetiologies and other aspects of IKS in an attempt to understand processes of health care utilisation behaviour, as they are directly linked to causal relationships within the respective community (*ibid.*). As noticed by Slikkerveer (1990: 11): ‘[...] [*They*] have made a direct link between medical knowledge systems and illness behaviour, which provides a more realistic base for health planning’.

Subsequently, scholars of ethnomedicine and medical anthropology have started to study the socio-cultural aspects of health and illness in conjunction with patterns of behaviour, as well as with the organisational and administrative aspects of health care delivery within the realm of *neo-ethnoscience*. Slikkerveer (1990) argues that the practical aspect related to the utilisation of health care services is differentiated not only by social inequalities and unequal delivery but also by distinct patterns of health and illness behaviour, known as ‘differential health care consumption’, as well as by the availability of different medical systems in the community. In this way, a new ethnomedical approach to the study of health care consumption, which includes cognitive and behavioural as well as system-related aspects, contributes to the bridging of the artificial gap between ethno- and biomedicine (*cf.* Slikkerveer 1990; 2006). As Slikkerveer

(1990: 3) concludes: ‘Such perspective on the pluralistic character of systems of health care delivery has provided ample scope for the development of a comparative study of the socio-cultural context of biomedical as well as other medical systems, nowadays referred to as the new or neo-ethnomedical systems approach. Kleinman (1978) argues that medical research directed at cross-cultural comparisons involves a quantifiable concept of culture in the context of health, a direct relation to clinical questions, substantial field research, an interdisciplinary translation between anthropology and health sciences, as well as a terminology, which includes ethnomedical and biomedical concepts alike.

In the ethnomedical studies carried out in the realm of *neo-ethnoscience*, the utilisation of plants for medical purposes has been identified as a significant component of health care consumption patterns across different communities. Consequently, scholars of *ethnoscience* frequently combine ethnobotanical and ethnomedical strategies in an attempt to adequately study indigenous concepts of health and illness (cf. Slikkerveer 1999b; 2006). Cotton (1996) and Bodeker (1999) confirm that, in view of the close links between *ethnobotany* and *ethnomedicine*, as subfields of *ethnoscience*, ethnobotanical research has come to include anthropological components, whereas ethnomedical studies have incorporated botanical aspects. In other words, the study of *ethnomedicine* is closely linked to the following concepts: (1) medical anthropology referring to the cultural aspects of health and illness; (2) medical ethnobotany referring to the identification of natural species used as medicine as well as to the analysis of indigenous systems of species classification; and (3) ethnopharmacology referring to the discovery and validation of plant-based remedies (cf. Cotton 1996). According to Cotton (1996), the study of *ethnomedicine* consequently receives a major impetus from a variety of professions, such as medical anthropologists, ethnotaxonomists, ethnobotanists, phytochemists, pharmacologists and medical doctors.

2.2.3 Medicinal, Aromatic and Cosmetic (MAC) Plants

Within the field of *ethnoscience*, a significant amount of academic research has been devoted to the study of plants used for medical purposes, one of the oldest forms of ethnobotanical and ethnomedical research known (cf. Balick & Cox 1996; Cotton 1996; Bodeker 1999; Slikkerveer 2006). Balick & Cox (1996) demonstrate that approximately 3.5 billion people continue to rely on the medical properties of plant components. In particular, medicinal plants form one of several categories related to human plant-use, as identified by Cook (1995). In an attempt to present a general identification of wild plants growing in the Mediterranean Region, which is known to maintain a ‘great tradition’ of the wspecific use of medicinal plants, the MEDUSA Network (2002) presents the following classification of human plant-uses:

- food (food and beverages for humans);
- food additives (processing agents and additive ingredients used in food preparations);
- animal food (forage and fodder eaten by vertebrates);
- bee plants (sources for honey production, including pollen and nectar);
- invertebrate food (plants eaten by invertebrates useful to humans, such as silkworms);
- materials (woods except for wood used as fuel, fibres, cork, cane, tannins, latex, resins, gums, waxes, essential oils etc. and their derived products);
- fuels (including fuel-wood, charcoal, fuel alcohol);
- social uses (plants not definable as food or medicines, such as masticatories, smoking materials, narcotics, hallucinogens and psychoactive drugs, contraceptives, abortifacients and plants with ritual or religious significance);
- vertebrate poisons (plants accidentally and usefully poisonous to vertebrates);
- non-vertebrate poisons (plants accidentally and usefully poisonous to non-vertebrates, plants, bacteria and fungi);
- medicines (for human and veterinary uses);

- environmental uses/habitat and landscape modification (including plants used for erosion, control, shade, shelter, restoration and rehabilitation, ornamentals, soil improvers, boundaries, firebreaks and pollution control);
 - gene sources (wild relatives of major crops).
- (*cf.* Cook 1995; Skoula *et al.* 1997; 2003; Slikkerveer 1999b; MEDUSA 2002).

The categories of human plant-uses are by no means exclusive and as a single plant can moreover be used for multiple purposes, it may fall into the category of more than one use (*cf.* De Vries 2007). On the basis of the classification of useful plants provided by the MEDUSA Network, the category of medicines can be extended further in an attempt to conceptualise all plants, which have been identified as beneficial to human health. In this respect, a number of scholars advocate the concept of Medicinal, Aromatic and Cosmetic (MAC) Plants as a means to incorporate all plants known for their interrelated medicinal, aromatic and cosmetic health-promoting effects (*cf.* Quah & Slikkerveer 2003; Agung 2005; Ibui 2007; Leurs 2010). In this way, the beneficial effects of perfumery plants, spices, food additives, foods as well as fragrances and essential oils have been grouped under the category of aromatic plants. The concept of Medicinal and Aromatic Plants (MAP) has been employed by some international organisations concerned with the conservation and human use of natural resources to refer to plants applied as medicines, cosmetics, herbal teas, spices, liqueurs and bitters, insecticides and fungicides as well as domestic cleaning products (*cf.* TRAFFIC 2008; IUCN 2012). Heywood (1997b) observes that a growing interest in the uses of medicinal and aromatic plants led to the establishment of the *International Council for Medicinal and Aromatic Plants* (ICMAP) during the first World Congress on Medicinal and Aromatic Plants (WOCMAP) held in 1991. In addition to medicinal and aromatic plants, Slikkerveer (2006) argues that cosmetic plants have already been used in ancient Egypt and among the early Mediterranean aristocracy for their cosmetic effects. Moreover, from an ethnobotanical point of view, the term ‘MAC plants’ reflects the indigenous inclusive classification of useful plants for not only medicinal and aromatic but also for cosmetic practices. Additionally, as the concept seeks to compensate the significant neglect of the large volume of plants used for cosmetic purposes worldwide, Slikkerveer and Baçer re-defined the concept of Medicinal and Aromatic Plants (MAP) into Medicinal, Aromatic and Cosmetic (MAC) Plants for the identification of these useful plants for the MEDUSA Network (*cf.* MEDUSA 2002).

In general, Slikkerveer (2006) observes that scholarly interest in the uses of medicinal and poisonous plants has expanded across disciplines since the first discoveries, which had been made in ethnobotany. Stressing the involvement of local communities, Balick (1994), Cotton (1996), Bodeker (1999), Skoula *et al.* (2003) and Slikkerveer (2006) argue that an ethnoscientific approach to the study of MAC plants significantly contributes to: a general understanding of forms of medical treatment; health care delivery improvements; knowledge recovery; plant documentation and classification as well as cultivation; a sustainable use of natural resources; and bio-cultural diversity conservation. As Slikkerveer (1999b: 42) stresses: ‘*The study of the category of underlying perceptions and cosmovisions of the different cultures [...] is extremely important as it would not only foster the local use and possible exploitation of alternative plants which may be economically viable, but it could also learn us more about the related, alternative philosophies of nature and the environment that exist in the region*’.

Recently, studies on the medicinal properties of plants have focussed on the scientific evaluation of medicinal plants in the search for new pharmaceutical medicines. Farnsworth (1994: 44) explains that MAC plants: ‘[...] *are currently serving the primary health care needs of most of the world’s population and this source must not be ignored in any programme of rational drug development starting with plant materials*’. Providing a rather cost-effective study method, research into MAC plants has been undertaken in order to screen plants for their medical components, particularly within the realm of a discipline known as Ethnopharmacology (*cf.* Plotkin 1991; WHO *et al.* 1993; Balick 1994; Farnsworth 1994; Alcorn 1995; Holmstedt &

Bruhn 1995; Balick & Cox 1996; Cotton 1996; Iatrou & Kokkalou 1997; Bodeker 1999; Slikkerveer 2003; 2006). Cotton (1996: 236) defines *ethnopharmacology* as: ‘*conventional analysis of traditional remedies including those based on plants*’. Holmstedt & Bruhn (1995: 338) theorise that ethnopharmacology relates to the ‘*observation, identification, description and experimental investigation of the ingredients and the effects of indigenous drugs*’. In this respect, Balick & Cox (1996) find that although modern scientific research conducted on the medical properties of plants has been scarce during the 1960s and 1970s as the result of financial limitations and a rather negative attitude among pharmacists towards plant-based medicine, a general reorientation based on an ethnoscientific approach generated a renewed interest in medicinal plants. Balick & Cox (1996: 36) moreover show that: ‘[...] *since the beginning of modern pharmacology, less than half of one percent of the species of flowering plants have been exhaustively studied to determine their chemical composition and medical potential*’. Although a relatively small number of plant species has yet been subject to scientific research on medical properties, MAC plants have also made rather significant contributions to modern pharmacological studies and as such continue to be analysed for their biochemical components (*cf.* Farnsworth 1983; Hoffmann 1983; Farnsworth & Soejarto 1991; WHO *et al.* 1993; Zhang 1998).

Nevertheless, patterns of over-exploitation of natural resources in conjunction with the predominantly ex-situ production of plant-based medicines have in many places culminated in a growing scarcity of available medicinal plants as well as in increasingly costly, time-consuming and hazardous processes of the development of new medicines. Slikkerveer (2003; 2006) claims that an ethnoscientific, cross-cultural research approach, which is primarily based on non-experimental validation techniques, advocates an analysis of plant effects on an individual level by means of analysing human factors, such as energy, activity, sleeping and eating behaviour, as well as symptoms of illness. The ethnoscientific research approach involves ethno-directed sampling techniques by which plants are collected on the basis of recommendations given by local healers, birth attendants or patients (*ibid.*). Moreover, as this approach is less costly and culturally appropriate, it adds a human dimension to otherwise rather species- and biochemical activity-oriented validation processes, which, in turn, favour the overall outcome. Farnsworth (1983) and Cotton (1996) similarly emphasise the beneficial effects for health of indigenous beliefs and practices, which are associated with the application of MAC plants, and as such increase the overall value of plant-based medicines. Farnsworth (1983: 184) points out that: ‘*it must be emphasized that in vitro and in vivo test results need not necessarily correlate with effects in humans*’ (2.8).

Recent patterns of over-exploitation of natural resources and bio-cultural diversity loss, not at least caused by the continuing search for new pharmaceutical medicines, however, tend to deprive the local population of the potential benefits of MAC plants (*cf.* Ayensu 1983; Balick 1994; Farnsworth 1994; Bodeker 1999; Slikkerveer 2003; 2006). As Ayensu (1983: 175) highlights: ‘*The unfortunate reality is that every acre of natural vegetation that is indiscriminately destroyed before it is explored, may rob mankind of yet another medicinal plant that could be the key to the cure of one of the ailments that still elude our skills*’. In this respect, Balick (1994), Alcorn (1995), Balick & Cox (1996), Cotton (1996) and Bodeker (1999) observe that research conducted on MAC plants in relation to IKS has made valuable contributions to bio-cultural diversity conservation. As Bodeker (1999: 266) indicates: ‘*Indigenous practices offer new directions in planning for medicinal plant biodiversity conservation*’. Furthermore, an ethnoscientific approach to the study of the use of MAC plants advances the general understanding of indigenous concepts of health and illness, contributes to an improvement of health care structures and people’s well being, and strengthens the position of indigenous communities at large (*cf.* Alcorn 1995; Balick & Cox 1996; Cotton 1996; Slikkerveer 2006).

In this way, Balick & Cox (1996) suggest that ethnoscientific research into the application of MAC plants provides a sound basis for the successful integration of traditional and modern medicine. In view of the rather significant contribution which studies on MAC plants provide to

the field of MAC plant validation, bio-cultural diversity conservation, health care improvement and the integration of traditional and modern medicine, numerous scholars stress the need for: protection of MAC plants and related IKS, particularly regarding the application, efficacy and safety of plants; collaboration between local medicinal plant experts, national and international herbal industries, as well as the international pharmaceutical industry based on the principles of sustainability; and a justified distribution of benefits within the realm of the protection of the indigenous peoples' intellectual property rights (*cf.* Balick 1994; Alcorn 1995; Balick & Cox 1996; Cotton 1996; Skoula *et al.* 2003; Slikkerveer 2006). In this respect, WHO (2002a) underscores that in view of the growing worldwide demand for plant-based medicine, individual countries are urgently required to introduce regulations regarding patterns of distribution and utilisation of useful plants. As Zhang (1998: 1) states: '*Developing countries [...] often have a great number of traditionally used herbal medicines and much folk-knowledge about them, but have hardly any legislative criteria to establish these traditionally used herbal medicines as part of the drug legislation*'. On the whole, Slikkerveer (2006) argues that the overall economic value of MAC plants has to be set on the basis of sales, declines in morbidity and mortality and the contributions made to the health profile the the general public.

2.3 Promotion of Community Health

2.3.1 Primary Health Care and Community Health

In view of worldwide movements of political reorientation and democratisation created in the aftermath of the Second World War, programmes of international development largely focussed on the need for improvement of modern health care delivery, particularly among rural communities in developing countries. As Bannerman *et al.* (1978: 9) mention: '*How countries can make health and medical care available to all their citizens and communities has been one of the major preoccupations of politicians, administrators, the community and health workers [...]*'. In general, a state of health is identified as a fundamental human right, whereby all people should have equal access to basic health resources (*cf.* Nutbeam 1998). Walt & Rifkin (1990) observe that a number of modern health care facilities have hereafter been established in various newly-industrialised countries during the 1950s. Subsequently, health care has been identified as a fundamental human need among other related factors, such as shelter, food, clothing, safe water and education, within the wider context of community development (*cf.* Walt & Rifkin 1990).

Buschkens & Slikkerveer (1982), Walt & Rifkin (1990), Buschkens (1990) and Slikkerveer (1990) note that subsequent strategies of health care delivery improvement adopted during the 1970s, which were increasingly concerned with the future of health care, came to embrace a new concept known as 'Basic Health Services' (BHS). The new approach to advancing BHS has largely been directed at improving the delivery of curative and preventive health care to rural population groups in an attempt to diminish the spread of epidemics, particularly by means of advocating preventive health care. In general, the strategies to improve BHS involved the establishment of modern health care facilities in rural areas and the development of a referral system operating between rural and urban facilities offering modern health care (*cf.* Buschkens & Slikkerveer 1982; Walt & Rifkin 1990; Buschkens 1990; Slikkerveer 1990). King (1966: 2:5) argues that: '*[...] patients are to be treated as close to their homes as possible in the smallest, cheapest, most simply equipped, and most humbly staffed unit that will look after them adequately. Only when a particular unit cannot care for the patient adequately is he to be referred to a unit higher up in the chain [...]*'. Streefland & Chabot (1990a) explain that the strategies designed for the improvement of modern health care delivery at the basic, community level entail the following, interrelated activities: (1) local practices of self-care, traditional healing, midwifery and the sale of modern medicines; (2) commitment of the village health workers, village health committees and villagers supporting the enhancement of community

health; and (3) outreach campaigns launched by modern health workers, such as immunisation. Activities grouped under the first and second category have been identified as community-based health care services (*cf.* Streefland & Chabot 1990a).

Buschkens & Slikkerveer (1982) and Buschkens (1990) observe, however, that the BHS approach largely failed to meet its objectives, since the activities of modern physicians remained largely restricted to urban areas, while their involvement with modern health care delivery in rural communities remained minimal. Since the BHS approach has been rather unsuccessful at meeting the actual health care needs, the majority of the population living in rural areas continued to rely on traditional medicine and on often costly, modern medicines (*cf.* Buschkens & Slikkerveer 1982; Buschkens 1990).

In an attempt to overcome the previous shortcomings and to strengthen universal access to modern health care services for the entire population, the concept of Primary Health Care (PHC) has been introduced at the 'International Conference on Primary Health Care' convened by WHO and UNICEF in Alma Ata (1978) (*cf.* Buschkens 1990; Walt & Rifkin 1990; WHO *et al.* 1993; Slikkerveer 1995; 1998; 1999; 2003; WHO 2008b; 2009) (2.9). As Nutbeam (1998: 352) states: '*Primary health care is essential health care made accessible at a cost a country and community can afford, with methods that are practical, scientifically sound and socially acceptable*'. In particular, the concept of PHC is based on the following 5 principles:

1. equity (equal accessibility, acceptability and affordability of health services, including the provision of essential medicines);
 2. prevention (cost-effectiveness; establishment of rural health centres; development of mass awareness and health education; organisation of immunisation campaigns; health education)
 3. appropriate technology (provision of more funds for the care and prevention of the most prevalent diseases);
 4. intersectoral action (allocation of resources from sectors such as health, nutrition, water management, education or family planning);
 5. community participation (involvement of beneficiaries in the decision-making process regarding health care priorities and resource allocation);
- (*cf.* Walt & Rifkin 1990; Slikkerveer 1995; Nutbeam 1998; Slikkerveer 2006; WHO 2008b; 2009).

Bannerman *et al.* (1983: 10) observe that the concept of PHC has been introduced on the basis that: '[...] *all citizens have a right to health and to medical care of their choice, and [...] this right should embrace save maternity, the healthy growth and development of children, maintenance of health in adult life, the protection of individuals and the community from environmental hazards, and the provision of medical care for the sick*'. WHO (2008b) notes that PHC is rooted in social justice, participation, solidarity and the general right to better health for all and herewith places people at the centre of any strategy designed to improve modern health care delivery. As Slikkerveer (1990: 29) observes: '*It is only through the main objective of the Primary Health Care Approach of community involvement that essential health care indeed can be made universally available to the entire population*'. Slikkerveer (1999a) moreover finds that the PHC-approach enables the integration of the great potential of IKS in modern health care delivery, as it adopts rather participatory and sustainable strategies towards the distribution of services. In this way, WHO *et al.* (1993) argue that the principle of PHC advocates, for example, the accommodation of traditional healers and their remedies in national health policies. Overall, various scholars acknowledge that the concept of PHC encourages interaction between community members, traditional health care providers including traditional birth attendants, local medicine vendors and modern health workers, who are trained by locally appointed representatives of the community (*cf.* Bannerman *et al.* 1983; Buschkens 1990; Slikkerveer 1990; 1998; Zhang 1998; WHO 2002a; Slikkerveer 2003).

As Slikkerveer (1982: 1861) observes: '[The] full use of all available human resources is regarded as a prerequisite for health care improvement'. Belos *et al.* (2005: 2) similarly note that PHC involves: 'providing comprehensive care to ambulatory patients; taking account of the family circumstances of the patients; providing home care; and integrating with the community'. Accordingly, an advancement of PHC depends not only on the availability of modern medical services but also on the wider context of the social, economic and political order created within the community (*cf.* Slikkerveer 1990; Walt & Rifkin 1990).

As Walt & Rifkin (1990: 17) indicate: 'Participation not only challenged the medical professionals' role, but also attempted to empower people to take political and individual control over their own lives. Its advocacy particularly focused on the poor and oppressed, using health as an entry point for gaining social justice'. Since its introduction in 1978, the concept of PHC has been adopted by a variety of international organisations, including WHO, particularly in its global strategy directed at the achievement of 'Health for All', which, as Nutbeam (1998: 352) mentions, refers to: '[the] attainment by all the people of the world of a level of health that will permit them to lead a socially and economically productive life'. The strategy of 'Health for All' has been introduced as part of the Alma Ata Declaration for the year 2000, but has since been continuously revised (*cf.* Slikkerveer 2003; 2006; WHO 2009).

Buschkens (1990) observes that financial problems, as the result of a widespread dependency on external financial inputs and low communal resources, as well as a general lack of manpower and trained personnel in rural areas, have complicated the implementation of PHC. Slikkerveer (1982; 1990) shows that during the 1980s, the majority of nations in Sub-Saharan Africa had to cope with a limited accessibility to PHC facilities and an unequal distribution of PHC services. In this way, Buschkens & Slikkerveer (1982) explain that restricted access to PHC facilities and services is caused by a variety of factors pertaining to *geographical, economic or socio-cultural* distance. In particular, the economic distance may hinder the patient's ability to pay for services and transportation or to leave work in order to seek treatment, which often leads to the loss of income. Furthermore, the socio-cultural distance may continue to remain because of different perception of illness; a general unawareness of the availability of modern health care services; negative previous experiences gained from interaction with modern health care services; and a general fear of modern technologies and personnel (*cf.* Buschkens & Slikkerveer 1982).

Foster & Anderson (1978) document that a number of indigenous communities tend to recognise illness primarily on the basis of visible symptoms of ill-health and fail to see the necessity of preventive forms of health care, such as laboratory tests and medical check-ups. Blum & Blum (1965) similarly observe that access to PHC services and facilities in Greece can be limited as the result of physical barriers, such as geographical distance and high expenses, as well as emotional barriers of feelings of shame or fear. Consequently, Foster (1983) concludes that the experience of disease is related to humanitarian, psychological, social and economic complexities alike.

King (1966) and Kleinman (1980) note that channels of health care delivery have to be adapted to the characteristics of the target population and have to be assessed in a holistic manner, whereby physicians are required to adopt a cross-cultural perspective (2.10). In view of the unequal distribution and accessibility of services and facilities and a continuation of the top-down strategies of health care delivery, Buschkens & Slikkerveer (1982), Buschkens (1990) and Slikkerveer (1982; 1990; 2003; 2006) promote the view that subsequent strategies for the improvement of the delivery of modern health care services should embark on a more participatory, bottom-up perspective from the communities concerned. Moreover, the new strategy of community health should encompass not only the physical, mental and social well-being of the entire population, as advocated by the PHC approach, but also include the cultural health and well-being of the people in the communities. As mentioned above, Sofoluwe & Bennett (1985: 3) define 'community health' most appropriately as: 'that branch of health service which aims at achieving the highest level of physical, mental, social, moral and spiritual health for all citizens on community basis. It seeks to do this by first identifying the root causes

of all prevalent diseases and health problems, and then dealing with them through a judicious utilization of governmental, private, and especially, communal resources'. In his conceptualisation of community-based health care, Slikkerveer (1995) strongly promotes the inclusion of the IKS-perspective in the improvement of health care delivery, aimed at the integration of traditional, transitional and modern medical systems. His approach is based on the analysis of the patterns of health care utilisation behaviour in the research area, where the indigenous knowledge and practices form the key for alternative strategies for health care improvement at the community level.

As Buschkens (1990: 10) observes: *'It has been more and more recognized that the main issue in health training has been not only to transmit technical skills and knowledge but also to transmit information regarding the patient's belief and behaviour'*. According to Voorhoeve (2003), a strategy towards the integration of traditional and modern medicine involves collaboration between traditional and modern health care providers in terms of knowledge exchange and mutual treatment advice. On the whole, Slikkerveer (1982: 1861) observes that the new, ethnoscientific-oriented approach to the improvement of community health has a positive effect: *'on the micro-level, where socio-demographic variables play an important role in health and illness behaviour, and on the macro-level, where national health policies need to be reformulated in terms of a more functional approach to the concept of "health for all".'* In view of these recent positive developments with the new community health approach, the inclusion of local peoples knowledge and practice in health and healing in its community-based approach, which adopts a 'bottom-up' orientation, can be regarded as a key-concept for health care improvement.

2.3.2 The Health Care Seeking Process

More recent approaches to the promotion of community health have generated renewed interest in patterns of health and illness behaviour shown by the target population, as they have recently attracted growing interest from researchers in various settings. The basis for such renewed interest has previously been laid by mainly medical anthropological studies on concepts of health and healing across cultures (*cf.* Blum & Blum 1965; Suchman 1965; Foster & Anderson 1978; Slikkerveer 1990). Blum & Blum (1965) and Slikkerveer (1990) define 'health-related behaviour' as adaptive practices followed in the absence of illness, which are designed to prevent illness and to promote health as well as to ensure the survival of the members of a specific community.

Mahler (1978: v) argues that: *'[we] view health behaviour [...] as a rational response (given the world view or cognitive orientation of the members of every group) to the perceived causes of illness'*. In this respect, Foster & Anderson (1987) and Foster (1983) further elaborate that practices of disease prevention and health promotion refer to a series of factors: sanitation; the cleaning of living environments; frequent bathing in order to avoid germs; a healthy and balanced nutrition; the avoidance of extreme cold and extreme heat; the application of protecting charms; and the adherence to communal rituals, particularly directed at the control of harmful spirits. In the same fashion, Brotons *et al.* (2005) argue that practices of disease prevention and health promotion include physical examinations, laboratory tests, as well as risk-specific and lifestyle counselling. Slikkerveer (1990) similarly observes that examples of health behaviour relate to administrative consultations, regular health check-ups and vaccination campaigns.

Cited in Suchman (1965: 114), Mechanic & Volkart define 'illness behaviour' as: *'the way in which symptoms are perceived, evaluated, and acted upon by a person who recognizes some pain, discomfort, or other signs of organic malfunction'*. In his classical study, Suchman (1963; 1965) makes between five stages of illness behaviour and medical care, still relevant today:

- 1 the symptom experience stage;
- 2 the assumption of the sick role stage;
- 3 the medical care contact stage;
- 4 the dependent-patient role stage;
- 5 the recovery or rehabilitation stage.

In general, the individual enters the first stage of symptom experience upon an encounter of physical discomfort, pain or a general change of appearance. Subsequently, the individual responds to the experience of physical change by means of making a cognitive interpretation of symptoms, namely by examining their interference with the social environment, which is commonly coupled with an expression of emotions such as fear or anxiety (*cf.* Suchman 1965; Foster & Anderson 1978). In this way, Suchman (1965) argues that forms of illness denial and hypochondriasis, as well as a general delay in seeking treatment emerge during this stage. Van den Akker (2002) observes that although individuals naturally enter the stage of symptom experience, they do not necessarily run through all subsequent stages of illness behaviour. Foster & Anderson (1978) similarly state that the recovery of health is not always a priority, whereby certain illness may be welcomed as a temporary break from daily routines.

Subsequently, the assumption of the sick role stage relates to the reaction and subsequent acceptance of symptoms by the so-called 'lay referral system' or 'illness management group', which usually includes the individual's family, friends, neighbours and colleagues and may occasionally also include fellow community members, village elders or religious representatives (*cf.* Suchman 1965; Foster & Anderson 1978; Kleinman 1978; Helman 1981; Van der Hoeven 1992; Van de Kerk 1993). Kleinman (1978) refers to this stage as the 'popular arena of illness experience' in which decisions are made in accordance with the family context, the social network and communal activities involved. White *et al.* (1976) similarly observe that the experience of ill-health causes a disturbance in both the individual and the social system whereupon one type of illness can result in different aspects of social response. Arnold (1986), who refers to the 'illness management group' as the 'therapy managing group', notes that the particular type of illness generally determines the behaviour of the members of the group. Suchman (1965) and Van de Kerk (1993) note that it is the consent to suspend social obligations and activities due to the illness, mostly given to the individual by the 'lay referral system', which ultimately results in the individual assuming the sick role. As Foster & Anderson (1978: 159) note: '[...] [An] individual is not socially defined as a sick person until his claim is "validated" by his associates'. During this stage, the 'illness management group' furthermore provides the individual with moral support, information, assistance and treatment, particularly in the form of home remedies and advice on decisions regarding future medical conduct (Suchman 1965; Van de Kerk 1993).

As Suchman (1963: 64) notes: *'The values and customs of a community or a social group strongly influence their perception of the symptoms of disease, their interpretation of these symptoms, and their techniques for treatment'*. In case that the symptoms are familiar, Blum & Blum (1965), Foster & Anderson (1978) and Van de Kerk (1993) furthermore show that during the assumption of the sick role stage, a self-diagnosis is made on the basis of ideas and perceptions, generated by the 'lay referral group', which determines and at times facilitates the subsequent course of treatment. At this point, the individual may, however, abandon the stages of illness behaviour and follow patterns of self-care, also known as 'self-help', 'self-treatment' or 'self-medication' (*cf.* Helman 1981; Dhillon *et al.* 2007; Kristoffersen *et al.* 2008). As WHO (2009: 4) explains: *'Self-care includes all health decisions people make for themselves and their families to become and remain physically and mentally fit such as eating healthy food, exercising regularly, practising good hygiene, and avoiding health hazards'*. Embedded in local systems of knowledge, practice and belief, self-care actions generally include a wide range of practices, such as the utilisation of MAC plants and home remedies as well as of spiritual and religious forms of medicine. Furthermore, self-care incorporates patterns of self-administration of

pharmaceutical medicines, which have been obtained from a lay specialist, such as a family member, friend or fellow community member (*cf.* Dhillon *et al.* 2007; Kristoffersen *et al.* 2008; WHO 2009). As Helman (1981: 549) states: '*Lay use of self-prescribed medicines - whether modern or traditional remedies - follows logically from patients' beliefs about the nature of these preparations and the conditions in which they are useful*'. In this respect, WHO (2009) identifies practices of self-care as a crucial starting point for the promotion of PHC and as a key-strategy for advocating illness treatment and disease prevention as well as health promotion.

In case that the sick individual and the 'illness management group' are unable to treat the illness, a professional health care provider is consulted and *illness* is converted into *disease* during the subsequent medical care contact stage. Hereafter, the health care provider makes a medical diagnosis, confirms the incidence of disease by writing a sick note or prescription and administers an appropriate course of treatment. On rare occasions, the individual may at this point reject the diagnosis and seek advice and treatment from another source of health care (*cf.* Suchman 1965; Kleinman 1978; Helman 1981). Van de Kerk (1993) explains that the 'illness management' group continues to advise the individual on forms of treatment during this stage and may moreover assist the individual in arranging medical consultations. In this way, the forms of diagnosis and subsequent treatment commonly acquire a wider social dimension, particularly among indigenous communities, as illness is interpreted in terms of a social crisis and requires readjustment of the society at large. The diagnosis of certain conditions, such as mental illness or leprosy, which have long been associated with social stigma, can ultimately result in the individual's exclusion from the community (*cf.* Foster & Anderson 1978; Van de Kerk 1993; Molenaar 1999).

During the dependent-patient role stage, the individual establishes a dependency relationship with the health care provider in terms of assuming the role of the patient, transferring control to the provider and following the prescribed treatment (*cf.* Suchman 1965; Foster & Anderson 1978). According to Helman (1981) and Van de Kerk (1993), the illness management group continues to offer advice and support to the individual during this stage and may hereby influence the patient's attitude towards and compliance with the instructions for treatment. As Helman (1981: 550) notes: '*Both the diagnosis and the prescribed treatment must make sense in terms of the patient's lay models of illness or they will not be accepted*'. Finally, the patient enters the recovery or rehabilitation stage in which individuals resume their previous social roles - a transition, which may at times be accompanied by the performance of certain rituals (*cf.* Suchman 1965; Foster & Anderson 1978). Foster & Anderson (1978) claim that it is during this last stage of illness behaviour that the individual may adopt the new social role of a chronic patient and herewith pose a challenge to the health care system as well as to the community at large. According to Van de Kerk (1993), the 'illness management group' either accepts the patient's recovery and resumption of social roles or acknowledges the individual's new role as a chronically ill patient or long-term rehabilitee, coupled with a concurrent change in the social tasks of the individual, during this stage.

Slikkerveer (1990: 40) argues that a distinction between the different stages of illness behaviour allows for: '*rendering illness capable of being described as a dynamic process of successive choices from alternative forms of behaviour*'. Forms of illness behaviour are primarily characterised by differential patterns of sick and patient role performance, namely by diverse forms of medical treatment sought by the members of a specific community (*cf.* Slikkerveer 1990). In this way, Foster & Anderson (1978) and Slikkerveer (1990) observe that the sick and patient role is influenced by a number of personal, namely demographic, cultural and socio-economic factors. Individuals may choose between practices of internal and external care during the assumption of the sick role stage. Concurrently, people may seek treatment from different types of health care providers at once during the medical care contact stage, where they adopt a practice, which Slikkerveer (1990; 2003; 2006) defines as 'healer shopping'. As Blum & Blum (1965: 90) argue: '*In a culture where there are several independent systems available for explaining the causes of illness, one does well, in seeking a cure, to cover one's bets*'. In rural

Greece, for example, '[the] cheap and local remedies are tried first, before an illness has become a serious threat to comfort or performance. Once a condition has progressed, other treatment means will be applied, usually several at once, so that treatments involving several different concepts of illness causation are at work at the same time' (*ibid.*: 167). Slikkerveer (1990) explains that a detailed analysis of patterns of illness behaviour highlights the steps involved in the search for alternative forms of medical treatment, namely the contacts between the individual and a representative of any medical system available in the community.

2.3.3 The Utilisation of Medical Systems

Studies on patterns of illness behaviour are shedding light on the availability of different medical traditions within a specific community. As Slikkerveer (1990: 164f.) observes: '*Broadly speaking, the social, cultural ethnic and historical aspects of health, illness and healing constitute a complex system of various medical traditions within the community. [...] [The] pattern of medicine [...] will be regarded as a complex network of social and cultural traditions and institutions which for generations have enabled the community to deal with crises of illness and death, variously expressed in beliefs and practices among both medical specialists and the local population*'. In order to distinguish between different medical systems maintained by the members of a community, Leslie (1976) introduced the concept of *medical systems*, as they evolve out of people's response to the biological and social consequences accompanying an episode of illness. While the concept of medical systems has been originally developed in order to analyse the pluralistic medical configurations of societies across Asia, it has since been applied by a variety of scholars to different settings (*cf.* Dunn 1976; Kohn & White 1976; Landy 1977; Foster & Anderson 1978; Bannerman *et al.* 1983; Slikkerveer 1990; 1995; 2003; 2006).

Following the concept of medical systems, illness is interpreted as a cultural construction, which determines certain forms of health-enhancing behaviour, beliefs about illness causation, the experience of symptoms, patterns of illness behaviour, decisions about treatment and the evaluation of treatment outcomes (*cf.* Kleinman 1978). Slikkerveer (1990: 18) argues that medical systems embrace: '*all medical knowledge and practices within a given socio-cultural context, including self-treatment, traditional medicine and biomedical health care*'. Furthermore, Landy (1977) and Kleinman (1978) observe that each medical system incorporates both a cultural system composed of local concepts, theories and perceptions, as well as a social system, which refers to the organisation of social roles and institutional structures within the community.

In the same fashion, Foster & Anderson (1978) conclude that medical systems refer to the totality of culture-specific medical knowledge, practice and belief, as well as to aetiological theories, social institutions and therapeutic techniques available in the community. Every medical system can be divided into: a disease theory system, which relates to local ideas about health and illness, including the causes, symptoms, effects and treatment of illness as they are embedded in the socio-cultural context of the community; and a health care system, which refers to flexible types of social interaction and resource mobilisation encouraged within the community in order to restore health (*cf.* Foster & Anderson 1978). Dunn (1976: 135) similarly defines each 'medical system' as: '*the pattern of social institutions and cultural traditions that evolves from deliberate behaviour to enhance health, whether or not the outcome of particular items of behaviour is ill health*'. On the whole, medical systems incorporate: local systems of knowledge, practice and belief, which aim at the restoration and promotion of health; any form of clinical and non-clinical activity, including social norms, which govern the choice and evaluation of illness treatment; and any type of formal and non-formal institutions offering health care personnel and resources (*cf.* Kohn & White 1976; Foster & Anderson 1978; Kleinman 1980).

White *et al.* (1976: 4) find that: '*[the] evolution of each system is the unique, complex result of historical and cultural trends and of political, economic and social tensions*'. In this respect, Slikkerveer (2003; 2006) notes that communities are usually characterised by the co-existence of

different, namely local, regional and cosmopolitan, medical systems. Overall, medical systems are based on a pluralistic and flexible structure composed of different types of medical knowledge, practice and belief as well as practitioners and institutions, which resemble the overall pluralistic character of the community concerned (cf. Leslie 1976; Landy 1977; Slikkerveer 1990; 2006). As Slikkerveer (1990: 14) observes: '[...] *[Medical] pluralism refers to the historically grounded co-existence of more than one medical system which in a more or less interconnected way seeks to maintain the health status within the community*'. In fact, '*[this] approach allows for plurism in terms of the diversity of knowledge and perceptions regarding illness, diagnosis and therapy, lay and professional healers, institutions and services [...]*' (ibid.: 166). The concept of medical pluralism, which embraces the co-existence of different medical systems within a specific community, allows for a more realistic assessment of people's illness behaviour (cf. Slikkerveer 1982; 2006). As Slikkerveer (1990: 62) claims: '*Analysis of the illness behaviour which has been studied will confirm the significance of pluralism at the level of utilisation of various medical systems*'.

In this respect, Leslie (1976) argues that the introduction of medicine as an academic discipline coupled with the widespread bureaucratic organisation of physicians and the supervisory role assumed by the state have, however, resulted in a rather hierarchical organisation of medical systems across societies. In other words, modern medical systems, which are rooted in an international knowledge system, have frequently subordinated traditional medical systems based on local systems of knowledge, practice and belief. Furthermore, the hierarchical structure of the plural medical system has frequently entailed unequal access to medical services offered to the members of a community (cf. Leslie 1976; Hanepen 1997). Nevertheless, White *et al.* (1976) and Slikkerveer (1990) argue that the components of each medical system are rather interactive and dynamic, as they are under the continuous influence of socio-historical changes, economic developments and scientific progress.

In view of the different components and the hierarchical position generally ascribed to each medical system, Leslie (1976) argues that forms of subordination and access to health care services provide a sound basis for comparing medical systems across communities. White *et al.* (1976) observe that medical systems naturally differ across communities, primarily on the basis of diverse social philosophies and institutional conditions. In spite of this general diversity, Foster & Anderson (1978) identify the following universal characteristics among medical systems across communities: (1) the embeddedness of the medical system in the socio-cultural context, namely the history, cosmovision, jurisdiction and local economy of the community; (2) a general distinction between illness and disease; (3) the concurrent availability of preventive and curative forms of medicine; and (4) the functioning of the medical system as a rational system, which supports social norms, controls aggression and reinforces practices of health promotion. In this context, Foster & Anderson (1978: 43) notice that: '[...] *the threat of illness as a consequence of socially unacceptable behaviour plays a major role in many societies in maintaining the moral order*'.

On the whole, the medical systems approach allows for a detailed analysis of patterns of illness behaviour as well as health care delivery by means of studying people's health care utilisation behaviour, *i.e.* the contacts between individuals and the plural medical system operating within a specific community (cf. Kohn & White 1976; Slikkerveer 1982; 1990). Slikkerveer (1990) elaborates that comparison between different medical systems enhances the understanding of the influence of certain socio-cultural factors on patterns of people's health care utilisation behaviour. Foster & Anderson (1978), for example, observe that processes of under-utilisation of a particular medical system are frequently caused by a discrepancy in local perceptions of illness and official health care services. Slikkerveer (1982: 1860) stresses: '*the importance of understanding the influence of the structure of services as well as the attitude of the medical staff on the patterns of utilisation by the population*'.

Overall, it is likely that any reorientation towards alternative forms of medicine during the stages of people's health care utilisation behaviour is mainly based on a feeling of dissatisfaction with the health care services rather than with local perceptions of illness (*cf.* Foster & Anderson 1978).

As will be further elaborated in the next chapter, the study and analysis of peoples' patterns of health care utilisation demand not only an IKS-oriented approach but also a specific analytical model in which all relevant factors, including local peoples' indigenous knowledge of MAC plants, are being studied in their mutual relationship *vis-a-vis* the factors of the utilisation of the plural medical system.

2.4 Components of Plural Medical Systems

2.4.1 The Traditional Medical System

Following the distinction between traditional and modern medicine, as well as the concept of medical pluralism, the availability of a substantial amount of ethnomedical data, which have been collected across communities, has in many places resulted in the identification of a so-called traditional medical system (*cf.* Redfield 1956; Foster & Anderson 1978; Foster 1983; Bodeker 1999; Agung 2005; Leurs 2010; Ambaretnani 2012). Redfield (1956) explains that traditional medical systems generally evolve out of continuous processes of interaction between 'great' and 'little traditions'. Consequently, Foster & Anderson (1978: 46) argue that: '*[the traditional medical system] often plays an important role in the development of nationalistic pride, since it may symbolize the antiquity of the country concerned, and the high levels to which culture had evolved in ancient times*'. Redfield (1956) and Foster (1983) theorise that the spread of 'great traditions', such as humoral medicine, for example, can emerge in the similarities among traditional medical systems across different population groups. Consequently, traditional medical systems operating across communities can show a certain resemblance in terms of concepts of health and illness, as well as explanations for the cause, diagnosis and treatment of illness (*cf.* Foster & Anderson 1978; Foster 1983; Balick & Cox 1996). Balick & Cox (1996) explain that albeit individual differences, traditional medical systems generally show the following similarities: (1) the explanation of the cause, diagnosis and treatment of illness within the context of a particular cosmovision; (2) the provision of health care within the context of a particular culture; and (3) a repertoire of pharmaceutical substances.

Overall, Foster & Anderson (1987), Bodeker (1999), Agung (2005) and Leurs (2010) observe that traditional medical systems commonly employ a holistic concept of health, which refers to the balanced relationship between individuals and their natural, social and spiritual environment whereupon illness is regarded as the result of an imbalance in the relationships. Hereafter, positive health is not only related to the organs and tissues of the human body, but also involves a state of physical, mental, emotional, social, moral and spiritual well-being (*cf.* Foster & Anderson 1978; Foster 1983; Hoffmann 1983; Sofoluwe & Bennett 1985). Similarly, Bannerman *et al.* (1978: 9) explain that: '*traditional practitioners define life as "the union of body, senses, mind and souls" and describe positive health as "the blending of physical, mental, social, moral and spiritual welfare*'. Furthermore, Foster (1983), Hoffmann (1983) and Bodeker (1999) claim that the following phenomena have been identified as typical causes of illness across traditional medical systems: angry deities; ancestors and other ghosts; sorcerers and witches; unease of the soul infiltrating the human body; loss of the soul in terms of detachment from the body; spirit possession or the intrusion of an object into the body; loss of the basic body equilibrium; and the 'evil eye'. Hereafter, Foster (1983) and Hoffmann (1983) show that any method of illness treatment usually applied within the traditional medical system focuses on the individual as part of a greater whole and appeals to a change in the patient's consciousness and attitude towards life.

Medical treatment is generally directed at supporting the human body in its attempt to heal itself, whereby recovery is achieved upon the release of inner powers rather than through an outside agent (*cf.* Foster 1983; Hoffmann 1983).

The traditional medical system has moreover been identified on the grounds of particular material and non-material forms of treatment, which refer to the combined application of plant, animal and mineral remedies, as well as spiritual and religious forms of medicine (*cf.* Foster & Anderson 1987; Ayensu 1983; Bodeker 1999). In this respect, Bodeker (1999: 264) observes that: '[the] cosmologies of traditional [medical] systems, then, ascribe life, spiritual value and interconnectedness among all life-forms to the aspects of the natural world used in the process of promoting human health and well-being'. Furthermore, Brelet *et al.* (1983) argue that traditional medical systems commonly incorporate forms of self-treatment or forms of treatment, which are administered by non-professional members of the community. Furthermore, traditional medical systems embody the treatment activities of a variety of traditional health care providers, such as traditional healers, herbalists, bone-setters and divine healers (*cf.* Foster & Anderson 1987; WHO 2002a). Foster & Anderson (1978), Foster (1983) and WHO (2002a) differentiate between: (1) herbalists and other practitioners, who acquire their medical expertise through interaction with the natural environment, accept the patient's self-diagnosis and provide the appropriate remedy; and (2) divine healers, who acquire their medical expertise on the basis of interaction with the supernatural environment and summon supernatural powers in order to establish a diagnosis and provide the appropriate treatment. In the same fashion, Cotton (1996) distinguishes between traditional herbalists, who treat mostly common illnesses of natural origin on the basis of their knowledge of traditional remedies and the availability of MAC plants and shamans, who treat mainly inexplicable, internal ailments of religious or spiritual origin on the basis of their religious and spiritual beliefs, as well as their knowledge of psychoactive substances. In view of the general characteristics of traditional health care providers, Leslie (1976) highlights that practitioners of the traditional medical system are generally receptive to innovations and continuously adopt useful elements of different medical doctrines, thereby extending their repertoire of medical knowledge, practice and belief. As Cotton (1996: 235) highlights: '*One important aspect of many traditional medical systems is that they are characterised by the coexistence of several diverse and often competing healing traditions within a single community*'.

Considering their common features in terms of concepts of health and illness, as well as their explanations for the cause, diagnosis and treatment of illness, traditional medical systems form a valuable source of health care to primarily rural population groups worldwide. At least 80% of the African population, for example, rely on traditional medical systems as a means to address their health care needs (*cf.* Koumaré 1983; WHO *et al.* 1993; Cotton 1996; Zhang 1998; Bodeker 1999; WHO 2002a). Bannerman *et al.* (1983), Slikkerveer (1990) and WHO (2002a) observe that mostly in developing countries, the traditional medical system is held in high esteem and accepted for its diversity, flexibility, accessibility, affordability, low level of technological input and growing economic importance, as well as for the trustworthiness and sincerity of its medicine providers. Nevertheless, traditional medical systems are by no means a phenomenon exclusive to rural areas or developing countries. Brelet *et al.* (1983) and Ellen & Harris (1999) claim that traditional medical systems are also available in the more industrialised societies of Europe in the form of surviving traces of folk or popular medicine, which have provided the primary source of health care to societies prior to industrialisation. Although traditional medical systems since that period of time have largely been dominated by modern medicine, not at least following experimental research into the natural world which has been conducted during the 18th and 19th century, local systems of knowledge, practice and belief of the traditional medical systems have persisted among numerous communities in Europe and North America, in particular in the rural areas. Moreover, a growing dissatisfaction with official, namely modern, health care doctrines has recently resulted in a renewed interest in practices of self-care and care provided by traditional medicine providers, as they form part of a greater traditional medical

system (cf. Blum & Blum 1965; Brelet *et al.* 1983; Slikkerveer 2006). As Ellen & Harris (1999: 180) note: ‘*But Western folk-knowledge - non-professional, experimental, uncodified, ad hoc, often orally transmitted - is arguably just as important as it has been*’. Supported by archaeological discoveries, Brelet *et al.* (1983) explain that the utilisation of MAC plants, which have mainly been applied during practices of self-treatment as well as during treatment administered by local herbalists, has over the centuries also constituted an integral element of traditional medical systems operating in a number of European communities. Although the primary use of MAC plants in contemporary Europe refers to their sale in pharmacies, supermarkets and special health stores, indigenous knowledge of plants used for medical purposes in many places, including the rural areas of Greece, has been preserved - or even revitalised - among population groups and herbalists following their profession to this day (cf. Brelet *et al.* 1983). As Brelet *et al.* (1983: 244) note: ‘*Herbalism persisted in all parts of Europe with more or less intensity and even today there is hardly any household without some knowledge of at least a few plants used for teas, compresses, inhalations, etc.*’.

In the same fashion, Brelet *et al.* (1983) argue that population groups continue to adopt traditional healing practices, such as balneotherapy, which has been practised in the healing temples of Ancient Greece, as well as cupping or bleeding, which became part of the official, modern medical doctrines of various countries in Eastern Europe. Finally, traditional medical systems operating in Europe have acquired an essential religious and spiritual dimension through the introduction of Christianity, as despite the absorption of pagan magical and spiritual elements, it embraces a religion and mysticism, which generates a substantial amount of medical knowledge, practice and belief (cf. Brelet *et al.* 1983). In general, traditional medical systems available among population groups in Europe incorporate particular systems of indigenous knowledge, practice and belief, which typically involve the utilisation of MAC plants, other traditional remedies and therapies as well as religious and spiritual forms of medicine. In Chapter VI, the actual situation of the traditional medical system in the research area of Pírgos and Praitória will be further described.

2.4.2 The Transitional Medical System

In general, academic research into patterns of health care utilisation behaviour and medical pluralism has primarily been characterised by the classic distinction between traditional and modern medical systems. Nevertheless, this separation has at times been interpreted as an oversimplification of matters, which overlooks the existence of elements, which are not incorporated in either system (cf. Buschkens & Slikkerveer 1982; Slikkerveer 1990; Dijkstra 2005). Buschkens & Slikkerveer (1982) and Slikkerveer (1990) argue that the activities of vendors of pharmaceutical medicines, for example, belong to a rather unofficial system of medical treatment, which operates independently between and among traditional and modern medical systems. In attempt to capture the characteristics of this intermediate system, Slikkerveer (1982, 1990) introduces the concept of the *transitional medical system*, which describes a medical system in transition from a traditional to a modern medical system. As Slikkerveer (1982: 1863) elaborates: ‘*The transitional medical system may be defined as involving the large-scale commercial production and sale of indigenous and [modern] pharmaceutical medicines*’. In particular, Buschkens & Slikkerveer (1982) explain that the transitional medical system originally referred to the activities of medicine vendors in developing countries, who practice, often illegally, between urban centres in which contact with the modern medical system has become standard practice, and rural communities, which continue to rely primarily on the traditional medical system. Following the sale of MAC plants as well as pharmaceutical and CAM medicines in more industrialised societies today, the useful concept of the transitional medical system can be adapted as to circumscribe the commercially-oriented sale of any type of medicine in local institutions, such as pharmacies or supermarkets, through the intermediary of transitional health care providers, including pharmacists, pharmacy

assistants or sales people. Moreover, the transitional medical system incorporates the sale and subsequent application of any medicine, which has been produced commercially for the purpose of sale, thereby including non-processed plant-based as well as pharmaceutically processed medicines (cf. Slikkerveer 1982; 1990). As Slikkerveer (1990: 211) observes: '*Important considerations here are the economic and financial interests of the major pharmaceutical industries and the position of intermediaries, together with the [virtual] absence of any government control*'.

The transitional medical system often combines the sale of Over-the-Counter (OTC) medicines, *i.e.* medicines without prescription, and the sale of medicines on prescription issued by a modern health care provider. With regard to prescribed medicines, the commercial dimension, as it characterises the transitional medical system, usually encompasses the payment of health insurance or physician services. According to Kohn & White (1976), the payment of insurance or physician services to a certain extent equalises the purchase of OTC medicines, so that prescribed and non-prescribed medicines can function as exchangeable components of the transitional medical system, and by consequence should be studied in relation to each other. Such comparative approach to the study of prescribed and non-prescribed medicines has been applied by Slikkerveer & Lionis (2011). Since the application of medicines moreover embraces practices of self-care as well as the intermediary of a modern health care provider, the transitional medical system opposes to the characteristics of both the traditional and the modern medical system (cf. Mačukanović *et al.* 1976; Kennedy 1996).

Mačukanović *et al.* (1976) observe that the consumption of medicines in the form of application, injection, insertion or digestion has come to form one of the most common forms of medical treatment. Figueiras *et al.* (2001: 223) confirm that: '*[drug] therapy is one of the most widely used methods of treatment in primary care*'. In this respect, practices of utilisation of pharmaceutical medicines are closely related to patterns of prescribing (cf. Kohn & White 1976). In view of the widespread practice of issuing medicines on prescription, Canary (1983: 95) explains that: '*[the] selection of drugs in the allopathic system of health care delivery depends on the experience of the doctor and the availability of the drug*'. The common habit of applying prescribed medicines has, however, caused a number of complications, which emerge from practices of misuse, such as the patients' intake of medicines, which are, for instance, left over, stored at home, issued for a different complaint or prescribed in the name of somebody else (cf. Hanepen 1997). In this respect, Figueiras *et al.* (2001) observe that prescribing patterns have recently come under the influence of cost restrictions, constraints on the efficiency of care, patient expectations, advertisement by the pharmaceutical industry and a lack of adequate physician education. Although Stevenson *et al.* (1999) and Filipetto *et al.* (2008) find that physicians commonly misperceive and overestimate the expectations of patients towards receiving antibiotic treatment, Bradley & Bond (1995), Britten & Ukoumunne (1997) and Lionis & Philalithis (2008) argue that practices of prescribing are largely dependent on the high expectations of patients seeking a prescription for certain medicines, which results in patient-induced prescribing patterns. In order to improve the quality of the administration and application of prescribed medicines, Figueiras *et al.* (2001) suggest face-to-face conversations between the modern health care provider and the patient, as well as the use of printed information material. Nevertheless, the prescription and subsequent application of medicines have recently been significantly influenced by a substantial increase in the patients' knowledge and general use of pharmaceutical medicines, which has moreover been favoured by processes of deregulation rendering prescribed medicine available over the counter.

Kennedy (1996) elaborates that OTC medicines incorporate both non-prescribed medicines, of which the OTC status had been established, as well as medicines, which, formerly prescribed, have recently been deregulated as non-prescribed pharmaceuticals. On the whole, deregulation processes have been supported by: patients gaining a more convenient and economic access to medicines, while enjoying active involvement with health care matters; governments experiencing a relief from financial pressures following a shift of costs onto the consumers;

pharmaceutical companies finding new customers as well as possibilities to promote new prescribed medicines; and pharmacists assuming increased responsibility in recommending and supervising OTC medicine use (*cf.* Bradley & Bond 1995; Blenkinsopp & Bradley 1996; Kennedy 1996; Sleath *et al.* 2001; Harrington & Shepherd 2002; Berry *et al.* 2004; Bond *et al.* 2004; Wazaify *et al.* 2005). In this respect, Kotecki (2002) reports that the formulation and composition of the medicine, self-use of the product, scientific evidence and consumer feedback are the most crucial factors, which influence the pharmacist's recommendation of OTC medicine. The greater availability of OTC medicines has been accompanied by an advance in practices of 'self-medication' hereafter defined by Hughes (2003: 1): '*as the management of a minor ailment using a pharmaceutical product that is available without a prescription*'. As Sleath *et al.* (2001: 358) notice: '*Use of over-the-counter [medicines] is one of the self-care activities most often undertaken by patients*'. Mačukanović *et al.* (1976), Bradley & Bond (1995), Harrington & Shepherd (2002), Ferris *et al.* (2002), Hughes (2003), Berry *et al.* (2004), Bond *et al.* (2004), Wazaify *et al.* (2005) and Lynch & Berry (2007) highlight that the greater availability of OTC medicine has, however, fostered an improper use of medicines not at least advocated by the clients' wrongful assumption that OTC medicines are readily available and hereby safe or that there is 'a pill for every ill'.

The misuse of OTC medicines can relate to non-compliance with instructions, to inappropriate dosing or usage over an extended period of time as well as to the simultaneous intake of more than one medicine (*cf.* Mačukanović *et al.* 1976; Tzimis & Kafatos 1999; Hughes 2003; Berry *et al.* 2004; Bond *et al.* 2004; Filipetto *et al.* 2008). MacFayden *et al.* (2001) and Hughes (2003) furthermore observe that greater access to non-prescribed medicine can result in patterns of abuse, namely the use of medicine for non-medical purposes, such as mind-altering effects or weight loss. By consequence, Mačukanović *et al.* (1976), Slikkerveer (1990), Bradley & Bond (1995), Molenaar (1999), Sleath *et al.* (2001), Hughes (2003), Berry *et al.* (2004), Bond *et al.* (2004), Mossialos *et al.* (2004b), Slikkerveer (2006), Watson *et al.* (2006), Wilson *et al.* (2007) and Filipetto *et al.* (2008) argue that improper medicine use may: mask disease symptoms, promote misdiagnosis or cause a delay in treating a serious medical condition; increase the risk of adverse drug reactions and diseases induced by medicine; result in bacterial resistance and parasitic immunity; provoke feelings of 'chemophobia' due to negative side effects among clients; and impose a financial burden on community members lacking the ability to pay for medicines as well as on the society at large. As Tzimis & Kafatos (1999: 113) claim: '*Evidence indicates that the cost of [medicines] for patients is very high, and the over-use of [medicines] is both scientifically unjustified and economically wasteful*'. Bradley & Bond (1995) and Sleath *et al.* (2001) moreover express concern about the decline in patterns of communication between patients and physicians, as well as in patient control in view of the common practice of self-medicine. In particular, Eisenberg *et al.* (1993) indicate that a considerable number of patients in the United States tend to use certain unconventional, commercially purchased medicines in absence of any physician recommendation and without informing their physician about such practices although these forms of medicine are largely used complementary instead of alternative to conventional medicine. While Hughes (2003) warns that the number of OTC medicines purchased or pharmacies visited is generally not subject to any form of restriction, Kennedy (1996) challenges the fact that regulations regarding the use of non-prescribed medicines differ enormously between countries.

In response to such developments, Bradley & Bond (1995), Blenkinsopp & Bradley (1996), Bond & Bradley (1996), Kennedy (1996), Bouldin *et al.* (1999), Stevenson *et al.* (1999), Tzimis & Kafatos (1999), Hughes (2003), Berry *et al.* (2004) and Shi *et al.* (2009) stress the importance of appropriate drug information and adequate patient education, particularly in order to avoid forms of under- and overestimation of side effects among clients. According to Shi *et al.* (2009: 244), OTC medicine should: '*(1) have low potential for misuse, (2) treat an easily self-diagnosed condition, and (3) contain a package label with easily understood indications, contraindications, and use instructions*'. In this respect, patients are encouraged to report practices of self-treatment

with non-prescribed medicine, while physicians are urged to expand their knowledge of OTC medicine, to report any application of non-prescribed pharmaceuticals among their patients, to inform patients about the proper use of medicines and to inquire and record any form of adverse drug reaction (cf. Bradley & Bond 1995; Blenkinsopp & Bradley 1996; Bond & Bradley 1996; Kennedy 1996; Stevenson *et al.* 1999; Hughes 2003; Berry *et al.* 2004; Watson *et al.* 2006; Lynch & Berry 2007; Lionis & Philalithis 2008; Simoens *et al.* 2009). As Bond *et al.* (2004: 275) stress: '[...] [*Patients*] and professionals should be educated about appropriate use of self-medicine to reduce unnecessary health care consultations, and to ensure symptoms requiring professional input are managed accordingly'. In this way, the position of pharmacists and pharmacy assistants acting as expert advisors and informants to clients, physicians and pharmaceutical representatives has received special attention (cf. Bradley & Bond 1995; Blenkinsopp & Bradley 1996; Bond & Bradley 1996; Kennedy 1996; Bouldin *et al.* 1999; Hughes 2003; Berry *et al.* 2004; Mossialos *et al.* 2004b; Zehnder *et al.* 2004). Bouldin *et al.* (1999: 288) note that: '*pharmacists have an opportunity to [...] provide information to the health care team, enabling integration of this aspect of patient self-care into the patient's overall care plan*'. Doloresco & Vermeulen (2009) explain that pharmacists are actively involved in the procurement, prescription, preparation, distribution and administration as well as outcome monitoring of medicines. Hughes (2003) and Zehnder *et al.* (2004) argue that pharmacists need to be provided with proper education and appropriate technology. In this respect, Zehnder *et al.* (2004: 201) comment that: '*future drug information for pharmacists needs to be short, easily accessible, up to date and trustworthy in order to address the needs of the patients*'. Wazaify *et al.* (2005: 175) similarly report that: '*[it] is recommended that by monitoring usage of certain OTC products, in addition to data recording and education, safe and effective use of such medicines can be promoted*'. As Bond *et al.* (2004: 267) suggest: '*Thus the role of the pharmacist is to ensure compliance with the OTC licence at the point of sale, either through direct involvement at the point of sale or through supervising non-pharmacy staff involved in the transaction*'. Similarly, Bradley & Bond (1995), Blenkinsopp & Bradley (1996), Kennedy (1996), Harrington & Shepherd (2002), Bond *et al.* (2004) and Shi *et al.* (2009) highlight the need for clinical guidelines, for safety and policy regulations and for computerised prescribing systems, which integrate the use of prescribed and non-prescribed medicines.

With regard to the position and use of the transitional medical system in Crete, two interesting studies have recently been carried out: The MA-thesis on '*Over the Counter Drugs in Rural Crete*' by Hanepen (1997) and the '*Report Assessing the Over-the-Counter Medications in Primary Care and Translating the Theory of Planned Behaviour into Interventions*' by Slikkerveer & Lionis (2011). These studies underscore *i.a.* that in order to improve the quality of administration and utilisation of medicines in the transitional medical system there is a need for collaboration between patients, clients, pharmacists and physicians, as well as for the integration of the local peoples' expectations at the community level. In view of the processes and complications involved, as well as the substantial number of studies conducted on patterns of administration and application of medicines across communities, the transitional medical system has come to form an additional and largely indispensable component of the plural medical system operating in societies worldwide. In Chapter VI, the actual situation of the transitional medical system in the research area of Pírgos and Praitória will be further described.

2.4.3 The Modern Medical System

In addition to the traditional and transitional medical systems, the spread of modern medicine has created a situation in which for the first time in human history, medical systems have been established, which are rooted in a rather universal conceptualisation of health and healing (cf. Hahn 1995). The modern medical system is also known as 'scientific', 'Western' or 'cosmopolitan' medical system, which as a transplant from the West in most countries is global in orientation based on scientific principals, scholarly education and training, as well as the

development and application of modern pharmaceutical medicines, which are largely developed in experimental research in laboratories and research institutes. It should be noted, that the formative period of time of cosmopolitan medicine dates back to the Renaissance of the 17th century, when in Europe, and in particular in Leiden, The Netherlands, a reassessment took place of the Classical Greek Ethnomedical system of scholars such as Hippocrates and Galen. The empirical principles, combined with the conceptualisation of the strong relationship between body and mind were re-discovered to become the basis for the later development of the cosmopolitan or modern medical system. The growth and expansion of modern medicine accelerated during the 19th century, when experimental studies in laboratories and research centers led to the development of anti-bacterial medicines, which provided an effective remedy against some major public health problems, including tuberculosis and related infectious diseases, around the globe. As Slikkerveer (1982: 1863) explains: ‘[...] [The] modern medical system includes those elements of scientific medicine which originated in Europe at the end of the Middle Ages and eventually constituted the worldwide cosmopolitan medical system’. Hahn (1995) further explains that the modern medical systems, which have been established across communities as the result of the expansion of modern medicine, commonly share the same characteristics. Indeed, modern medical systems typically employ concepts of objective evidence, logical inference and rationality and place a strong significance on the achievement of certainties as well as on the control of uncertainties. In this way, health is primarily viewed as a physiological functioning where healing practices describe a physical process in which disease, namely any physiological malfunctioning, is diagnosed and treated by means of applying the best available technical medical methods (cf. Hahn 1995).

In contrast to traditional medical systems, modern medical systems are predominantly characterised by forms of medical treatment, which involve consultation with a modern health care provider. The modern medical system is based on an objective system of knowledge, which is shared among modern practitioners in a hierarchical fashion, as the knowledge of physicians is generally given greater validity than the knowledge of other medical personnel, such as nurses or auxiliary medical staff, as well as the subjective knowledge shared by patients (cf. Hahn 1995).

In this way, Hahn (1995) elaborates that modern healing practices commonly involve the following elements: a) a notion of pathogens referring to natural phenomena, which are the cause of disease; b) a pathology, which addresses the nature of the disease; c) a focus on curative care directed towards the control or elimination of pathological conditions; d) a nosology based on the International Classification of Diseases designed by WHO; and e) practices, which are divided in many specialities.

Since the WHO International Conference on Primary Health Care (PHC) in Alma Ata in 1978, the modern medical system has incorporated the concept of PHC as: ‘essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community’. Although many UN Member States adopted the PHC approach, the Alma Ata Declaration was criticised as being too idealistic and too unrealistic in its time table. Later on, specific PHC-approaches have developed in different contexts to deal with disparities in resources and prioritisation in health problems. These approaches have become known as the Selective Primary Health Care (SPHC) approaches (cf. Braveman & Tarimo 1994). Nevertheless, the selective PHC approach to concentrate on the solution of severe population health problems in developing countries, where a few diseases are causing high rates of infant and child mortality, did not address the social causes of disease.

Canary (1983) explains that forms of consultation, which are held in the modern medical system generally include a description of the medical history and morbidity data of the patient, a physical examination and statistical measurements to support the subsequent diagnosis and treatment. Methods of treatment employed in the modern medical system can, however, take the form of recommendations offered by the modern health care provider on the environmental and social activities of the patient (cf. Canary 1983). As noticed by Hahn (1995: 267): ‘In [the

modern medical system], *sickness and pathology are conceived of as cellular, biochemical, physical disturbances of normal functions; it is assumed that the presence or absence of sickness can be empirically defined and determined by laboratory or other biological or physical tests. At best, the accounts given by patients can be used as clues to underlying physiological process*'. Bannerman *et al.* (1983), Slikkerveer (1990) and WHO (2002a), however, observe that in spite of the worldwide presence of modern medical systems, practices followed by modern health care providers remain largely restricted to industrialised societies and urban centres of developing countries. In Chapter VI, the actual situation of the modern medical system in the research area of Pargos and Pratoria will be further described based on the introduction of the PHC approach into Greece in the course of the 1980s.

Notes

- (2.1) *cf.* Appendix I for the full text of the Hippocratic Oath.
- (2.2) In addition to the god of health Apollo, his son Asclepius, who studied the art of healing from the wise Centaur Chiron, came to form the source of all divine medical knowledge in Ancient Greece. On the whole, Asclepius idealised healing practices to such an extent that healing temples, so called Asclepions, have been erected in Ancient Greece in honour of his name. Similarly worshipped for their healing lore, Asclepius' daughters have been venerated in the following fashion: (1) Hygeia, goddess of health, sanitation and hygiene, which highlights an early accentuation of health maintenance and disease prevention; (2) Panacea, goddess of universal remedy in the form of medicines, salves and other remedies; (3) Iaso, goddess of cures, remedies and modes of healing; and (4) Aceso, goddess of healing and the process of curing (*cf.* Tan 2002; Theoi Greek Mythology 2011; United States National Library of Medicine 2012).
- (2.3) The term 'holistic' originates from the Greek word for 'whole', 'olos'. Holistic healing practices are generally directed at the re-establishment of health in terms of a greater 'wholeness' (*cf.* Hoffmann 1983). As Hoffmann (1983: 14) argues: '*One must focus on the relationship between the individual and society, between organs and organisms*'.
- (2.4) The new ethnoscientific approach to the study of IKS has been widely promoted on the basis of the extensive and ground-breaking works by Brokensha, Warren & Werner (1980) on '*Indigenous Knowledge Systems and Development*' and by Warren, Slikkerveer & Brokensha (1995) on '*Indigenous Knowledge System: The Cultural Dimension of Development*'. In their work, they adopt a more dynamic approach to the study of IKS relating local perceptions, practices and experience to sustainable community development.
- (2.5) *cf.* Appendix II for the full text of the *Declaration of Belém*.
- (2.6) Skoula *et al.* (2003) explain that the Mediterranean Basin, which contains approximately 25.000 species of which a considerable number are endemic to the region, has been defined as one of the world's major centres of plant diversity and one of the centres of diversity for crop plants. In this respect, the Mediterranean Action Plan has been developed in 1975 by the European Community and the countries bordering the Mediterranean Sea in an attempt to counteract habitat deterioration and diversity loss, which are largely the result of harmful agricultural techniques, as well as processes of industrialisation and mass tourism and to promote sustainable, conservation-oriented practices in the region (*cf.* Heywood 1999). Recognising the cultural significance, as well as the pharmaceutical, nutritional and industrial potential of plants, the Mediterranean Islands Plant Specialist Group (MIPSG) has been founded in the aftermath of an international conference held on the Knowledge and Conservation of the Mediterranean Island Flora in 1993. In conjunction with the MIPSG, the International Union for Conservation of Nature (IUCN) similarly adopted a strategy towards the Conservation of Mediterranean Island Plants (*cf.* Delanoë & Montmollin 1999).
- (2.7) The 'culture and personality' movement refers to the increased interest among anthropologists and psychiatrists in adult personalities as well as human instinct and character across cultures, which, although it remained primarily theoretical, addressed certain factors related to the improvement of health care services (*cf.* Foster & Anderson 1978).
- (2.8) Farnsworth (1983) acknowledges that, in an attempt to collect all information on medicinal plants available, the Natural Products Alert (NAPRALERT) database providing computerised records on the chemistry and pharmaceutical components of plants includes ethnomedical information on the respective medicinal plant, thereby promoting its traditional application (*cf.* Farnsworth 1983).
- (2.9) *cf.* Appendix III for the full text of the Declaration of Alma-Ata.
- (2.10) The work by Bannerman *et al.* on '*Traditional Medicine and Health Care Coverage*' published in 1983 marks a milestone in linking traditional medicine to the wider context of health care delivery (*cf.* WHO 1978; Quah & Slikkerveer 2003).