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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

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Citation

Aiglsperger, J. (2014, November 18). *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*. Retrieved from <https://hdl.handle.net/1887/29757>

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Cover Page



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Issue Date: 2014-11-18

Chapter IX CONCLUSION

9.1 Conclusions

The main purpose of this study is to answer the research question: ‘*What kind of people use what kind of medicine for what kind of disease?*’ By means of two extensive household surveys, which have been conducted in the area of South-Central Crete, data have been collected for a total of 452 cases in order to analyse local patterns of transcultural health care utilisation behaviour. In particular, information has been gathered on a number of factors, which had been identified as determinants of behavioural patterns prior to the surveys and had been inserted in the multivariate model of transcultural health care utilisation, which has been adapted to this study following its successful application during previous research conducted on patterns of behaviour in related sectors of the society across different geographical areas (*cf.* Slikkerveer 1990; Agung 2005; Ibui 2007; Djen Amar 2010; Leurs 2010; Ambaretnani 2012; Chirangi 2013). In this way, the present study adopts the concept of medical pluralism, which distinguishes between different medical systems, as they are available in the research area. In general, the population of rural Crete seeks treatment from a variety of sources, namely from a plural medical system, which is composed of a traditional, a transitional and a modern medical system, and hereby adopts patterns of multiple utilisation. The concept of medical pluralism, which has successfully been applied by Slikkerveer (1990) in his study on patterns of health care utilisation in the Horn of Africa, refrains from a single focus on one medical system but adopts a combined focus on all medical systems available in the research area in a way to generate appropriate and locally specific information on patterns of behaviour. Furthermore, the concept of medical pluralism, as it has been applied to the research area of rural Crete, is substantiated by a community-based research approach. The different medical systems available in the research area have been identified on the basis of information received from the local inhabitants, whereas the analysis of patterns of health care utilisation behaviour is similarly rooted in accounts provided by the respondents rather than health care officials.

The data, which have been collected during the household surveys and have been subsequently analysed statistically, are substantiated by findings from qualitative research, which has been carried out in the research area prior, during and after the large-scale household surveys. On the basis of these qualitative data, this study moreover sheds light on people’s extensive knowledge and utilisation of locally available Medicinal, Aromatic and Cosmetic (MAC) plants and other traditional home remedies, as they form components of the traditional medical system available in the research area. In particular, a fairly substantial amount of local inhabitants use MAC plants as a first step within the process of health care utilisation, whereby diseases such as the common cold, for example, are almost exclusively treated with plant-based medicine. On the whole, practices of MAC plant-utilisation are firmly embedded in the socio-cultural context of the community, in which members continue to use plants not only for the treatment of illness but also for the prevention of disease and the promotion of health.

In this way, local inhabitants demonstrate a profound knowledge of practices of collection, storage and preparation of plants for medical purposes, which is shared among generations and continuously adapted to socio-economic developments. The utilisation of components of the traditional medical system, which include not only MAC plants and other traditional home remedies but also religious and spiritual forms of medicine, has until recently involved the intermediary of traditional health care providers. While the professions practiced by local empirical doctors, bone-setters, wise women, midwives and priests have gradually disappeared leaving the provision of traditional health care in the hands of a few selected wise women and priests still active today, MAC plants and other forms of traditional medicine are nowadays primarily applied through practices of self-care. Overall, the disappearance of the profession of the traditional health care provider is largely rooted in recent socio-economic trends, upon which the provision of health care has been transferred to providers of modern medicine and

pharmaceutical medicines. Nevertheless, the extension of patterns of self-treatment with MAC plants shown by the study population indicates that the traditional medical system continues to form a vivid component of everyday village life. In this respect, the findings of the present study moreover suggest that recent economic developments occurring in Greece have stimulated practices of self-care, particularly in relation to the utilisation of MAC plants.

Recent socio-economic developments and locally specific systems of medical knowledge, practice and belief moreover draw attention to the rather distinct geographical area, in which the present study has been carried out. On the whole, Crete offers an environment, which is rich in natural diversity, that is habitats and plant species, and enjoys a certain degree of geographical isolation, as the island is located in the Mediterranean Sea roughly equidistant from the Greek mainland in the North, the Asian continent in the East and the African continent in the South. In addition to its physical particularities, the population of present-day Crete looks back on a long history of population and culture exchange. Crete not only provided home to the ancient civilisation of the Minoans, but has throughout history also been occupied by a range of foreign population groups, including the Dorians, the Romans, the Arabs, the Venetians and the Turks as well as German forces during the Second World War. The natural and historical characteristics of Crete have gradually stimulated the development of a population, which to this day combines the extremes of isolation and exchange and is renowned in Greece and beyond for its fierceness, hospitality and local cuisine. The present study sheds light on the socio-cultural context of local patterns of health care utilisation behaviour and draws on the specific features of the research area, thereby adding significance to its findings. In particular, this research focuses on the concept of Indigenous Knowledge Systems (IKS), which has been applied to a variety of studies in mainly developing countries in a way to adopt a community perspective and to collect information on local systems of knowledge, practice and belief. The concept of IKS, as it has been applied to the present research area of rural Crete, forms an approach, which is most appropriate for the study of local behavioural patterns and for gaining an understanding of local concepts of health and illness as well as wider systems of knowledge, practice and belief. In this way, this research extends the scope of IKS to an area, which offers an environment rich in nature, history and culture and hereby sheds light on a population group, which is rather unique.

In general, the present study has applied the concept of medical pluralism, has adopted a community-based research approach and has extended the concept of IKS to the research area of rural Crete in order to offer an adequate overview on local patterns of transcultural health care utilisation behaviour developed by a considerable number of 'patients'. In addition to its overall aim, this research has achieved the following specific objectives:

Firstly, the two research communities have been described within the wider context of the Mediterranean Region, Greece and Crete, as presented in Chapter IV, while a sociography of the research area has been provided in Chapter V. In particular, the Mediterranean Region, which refers mainly to the countries bordering the Mediterranean Sea, is commonly identified as an area of both bio- and cultural diversity with many similarities. Located in the Southeast, Greece provides an example of a unique country of the Mediterranean Region, of which the general description provides the foundation for the presentation of the geography, climate and flora of Crete, the largest island of Greece. The natural environment of Crete offers a variety of habitats, which include maritime ecosystems along the coast as well as partly inaccessible mountain ranges, which cover the island in the East, the South and the West. To a certain degree, the mountain ranges contribute to the conservation of endemic plants, which grow in secluded areas out of the reach of humans and animals. The particular features of the natural environment of Crete provide a sound basis for human utilisation of plants, namely for a variety of purposes, including medical treatment. The general diversity of habitats and natural species, which are found in Crete and Greece as well as in the Mediterranean Region at large, not only favours the human use of plants, but also nurtures people's indigenous knowledge of the locally available plant species. Since the population of Crete has long regarded mountains as spiritual sites, these

knowledge systems are moreover frequently enriched with a belief in mythological, religious and spiritual elements. In the research area, the overall significance of the natural environment is reflected in the considerable number of 'patients' of the sample, who contact the traditional medical system, particularly as a first step within the process of health care utilisation. Furthermore, the everyday relevance of the natural environment is displayed in the extensive local knowledge of the traditional medical system and its components, which is largely based on the knowledge and practice of MAC plants and other traditional home remedies. Similarly, the spiritual and religious aspects of traditional medicine are shared by the inhabitants of the research area.

In addition to the diverse natural environment, Greece and Crete represent a long human history, which is primarily shaped by the continuous exposure of the local inhabitants to foreign invaders, whereby a state of unity among the population groups has been maintained throughout history in a joint resistance to the interference of external powers. Consequently, milestones in the history of Crete, as it joined the Republic of Greece in 1913, such as the rise of the early Minoan civilisation, the long period of Venetian occupation and the series of rebellions launched during the Ottoman rule, render the island rather unique. The remarkable history of Crete illustrates that the Cretan population appears to combine a continuous exposure and subsequent adaptation to foreign influences with a strong sense of local autonomy. On the basis of these findings, it can be understood why the inhabitants of the research area continue to use the MAC plants as a major part of the traditional medical system, both in the form of home remedies and self-care, and in addition seek treatment in the use of commercial, pharmaceutical from local pharmacists. Although the socio-historical developments commonly differ between Crete and on the daily life r regions in Greece, the recent Eurozone financial crisis of 2009 has had a strong impact on the daily life of the population of Greece at large. In the research area, the consequences of the crisis are visible in the increasing number of younger inhabitants, who had left the urban areas mainly because of unemployment and to move back in with their family members in the rural areas.

Also, the increased prevalence of mental diseases, such as stress and anxiety, often caused by financial insecurity and the availability of limited resources in the provision of modern health care, are largely the result of the recent economic crisis. Although the current economic situation in Greece has not been identified as a significant determinant of people's health care utilisation behaviour, it is likely that the local consequences of the crisis to some extent influence people's behavioural patterns. However, the negative socio-economic development tends to further increase the utilisation of the traditional medical system, particularly among younger inhabitants, which in some cases indicate the under-utilisation of the modern medical system.

Apart from the influence of foreign invaders over the past centuries, the Greek Orthodox Church remains a common element of Greek and Cretan culture, thereby playing a significant role in the everyday life of the local population. With respect to local patterns of health care utilisation behaviour, the tradition of the Greek Orthodox Church appeals to people's knowledge, belief and practice of health and healing, thereby providing not only certain forms of medical treatment but also spiritual guidance during episodes of illness.

While Chapter IV further presents the particular natural, historical and cultural features of Greece and Crete, Chapter V embarks on a detailed description of the sociography of the research area of South-Central Crete. In this way, the research communities of Pírgos and Praitória are described as located at the feet of the Asterousia Mountains and towards the eastern edge of the Mesara Plain respectively. The communities are surrounded by not only a natural environment rich in habitat and species diversity but also by a number of neighbouring villages, to which the local inhabitants are connected through their economic interests and social networks. As considerable number of inhabitants of the mountainous settlements south of Pírgos have either settled in Pírgos or reside in the community over an extended period of time, it can be assumed that the inhabitants of these fairly isolated mountain communities hold a particularly rich knowledge of the traditional medical system, nurturing the exchange and conservation of

knowledge and practice of MAC plants within the context of the traditional medical system among the community members in Pirgos and Praitoria. Although the majority of inhabitants of both Pirgos and Praitoria are born in the community or in the Municipality of Arkhanes-Asterousia, the history of the local population shows patterns of settlement of different population groups. In line with the characteristics of Crete at large, community members appear to combine a state of exchange with a state of local autonomy, which is visible in local values and customs. While only a minor percentage of community members have a nationality other than Greek and follow a religion other than the Greek Orthodox Church, the sample population demonstrates a strong local character and identification with what is defined as 'being Cretan'. In this respect, patterns of contact with the traditional medical system, which is embedded in the socio-cultural context of the community, can be interpreted as an expression of this special local character.

In addition to demonstrating such a strong local character, the inhabitants of Pirgos and Praitoria maintain a socio-economic network within the community, in which family relations, kinship ties, common spirituality and participation in religious and communal events play a significant role. In other words, local patterns of age, gender, household composition, education, marital status and occupation are all intertwined with an annual religious canon and a socio-economic calendar. In the research communities, the majority of inhabitants practice the profession of farming and follow an annual cycle of agricultural production. Given the embeddedness of local patterns of occupation in the socio-economic network of the community, it can be assumed that patterns of contact with the traditional medical system are stimulated by the widespread and continuous interaction between inhabitants adopting farming practices and the natural environment.

Secondly, the documentation of the plural medical system in the research area, which comprises the traditional, the transitional and the modern medical system, is documented and described in Chapter VI, Paragraph 6.2.1. In general, the concept of medical pluralism, which is applied to the present pluralistic medical configuration is based on the identification of the different systems of medical knowledge, belief and practice, as well as various health care providers found in the research area. The applied community perspective not only enables an appropriate and renewed focus on the local medical situation in this part of Crete, but also provides a deeper insight into the 'Participants' View' on the various medical systems in rural Crete. In general, the plural character of the medical system available in the research area is found to be rooted in the socio-historical developments in the region. Early archaeological finds indicate that the ancient Minoan and Mycenaean civilisations had already acquired a repertoire of extensive local knowledge on the use of plants for medical purposes and that the first inhabitants made already use of special medical instruments. Furthermore, the doctrines of humoral medicine, which had been developed and advanced by various scholars of Ancient Greece, such as Hippocrates, Dioscorides and Galen, have formed the basis of a remarkable system of medical knowledge, which has been maintained and reproduced repeatedly during later periods of time. Eventually, this early classical Greek ethnomedical system has later onwards provided the common ground of modern, cosmopolitan medicine taught at Universities today. In addition to the ancient doctrines of the Greek humoral medicine, religious healers have continuously formed an important source of medical knowledge in Crete and have frequently been engaged in the copying, editing and authoring of medical manuscripts as well as in the teaching of medical lore.

Following the independence of Greece and the foundation of the first Medical Schools in the countries, the modern forms of medicine, based on the medical knowledge taught at Universities further developed modern physicians and nurses, who soon became competitors of the traditional health care provider, who gradually disappeared from urban areas throughout the island. In the meantime, the worldwide trend in the development and distribution of commercial pharmaceutical medicines had reached Greece during the second half of the 20th century, prompting a n increasing consumption of pharmaceutical medicines among the population.

Interestingly, however, the recent economic crisis, which also affected the island of Crete has had a negative effect on the use of pharmaceutical as well as modern forms of medicine, whereas the use of traditional, plant-based medicine showed a gradual increase.

In view of these cultural and socio-historical developments, it has become evident that the population of rural Crete seeks medical treatment from a variety of sources, which are combined into the plural medical system available in the research area. Following the use of different forms of plant-based medicine since the earliest days of human settlement in the island, also religious and spiritual forms of medicine, involving the intermediary of a health care provider, have continued to form a central component within the local systems of knowledge, practice and belief of health and healing. Indigenous knowledge of MAC has hereby been identified as a major component of the 'traditional medical system', which has been in existence in this part of Crete since the earliest days of human settlement. Until recently, utilisation of the traditional medical system involved the intermediary of traditional health care providers, particularly local empirical doctors, herbalists, bone-setters, wise women, midwives and religious healers. Although the advance of modern health care providers has gradually replaced the profession of the traditional specialists, still various components of the traditional medical system are continually used, predominantly in the form of herbal medicine for home remedies and self-care. The results of this study indicate, as elaborated below, that a substantial part of the overall use of the plural medical system in the research is reported for the traditional medical system, in which the indigenous knowledge of MAC plants forms the major component.

Besides the traditional medical system, the inhabitants of rural Crete are seeking medical treatment in the form of the use of commercial pharmaceutical medicines, either obtained on prescription or purchased over the counter at local pharmacies, supermarkets and herbal shops. Overall, pharmaceutical medicines are applied through both practices of self-care as well as the intermediary of a professional health care provider. In order to substantiate this dual practice and the primarily commercial nature of pharmaceutical medicines, rather different from the traditional and the modern medical system, examples of commercial pharmaceutical medicines have been documented as components of the 'transitional medical system'. In addition to prescribed and non-prescribed medicines, the components of the transitional medical system include the sale of plants components, which are industrially packed and traded. Furthermore, patterns of use of non-prescribed medicines generally involve the advice of the local drug vendor or pharmacist. In this respect, the transitional medical system is positioned between the traditional and the modern medical system available in the research area. The results of this study indicate, as elaborated below, that a substantial part of the overall use of the plural medical system in the research is also reported for the transitional medical system by the study population.

In addition to the traditional and the transitional medical system, there exists the modern medical system in the research area, based on the medical knowledge and practice taught at Universities and Medical Schools. The establishment of modern health care facilities in Greece during the 20th century and the introduction of a national health care system in 1983 on the basis of the approach of Primary Health Care (PHC) has eventually resulted in the availability of rural health posts, regional health centres and urban hospitals across the island. In this respect, a rural health post, which is visited by a general practitioner between one and three times a week, has been established in both Pírgos and Praitória. By means of the system of referral, the health posts are connected to the rural health centre, which is located in the nearby community of Kharakas. Moreover, 'patients' in the research area, also use modern health services from hospitals or private clinics in urban centres, such as Iraklion or Athens and sometimes even outside Greece. The results of this study indicate, as elaborated below, that a less substantial part of the overall use of the plural medical system in the research is reported for the modern medical system by the study population.

Thirdly, the local system of traditional medicine and its components, *i.e.* mainly the people's indigenous knowledge of MAC plants and their application in herbal medicine and home remedies as well as the use of local religious and spiritual forms of medicine, are described in Chapter VI. Here, a detailed description of the traditional medical system existent in the research area highlights the concepts of IKS and traditional medicine within a geographical area, in which recent medical research has primarily focussed on the availability and distribution of modern medicine and pharmaceutical medicines. However, the inhabitants of the research area demonstrate a profound knowledge of the locally available traditional medical system, particularly of the collection, storage, preparation and use of MAC plants. The vast indigenous knowledge of the traditional medical system, particularly of MAC plants and related traditional home remedies, is locally referred to as '*Yiatrosafia*', 'Medical Wisdom', as it usually serves the purpose of finding locally available and effective solutions to common health problems. As indicated, the concept of '*Yiatrosafia*' has had a variety of different connotations throughout history, whereby it has also been used to describe the medical expertise and writings of a group of scholars in Byzantine Crete. Furthermore, '*Yiatrosafia*' has defined a type of medical knowledge, which combines historical sources of medical knowledge, notably texts of ancient scholars, such as Hippocrates or Dioscorides, with collective and personal ideas of healing practices adopted at the time (*cf.* Clark 2002; 2011). Embarking on local people's perspective, the present study relates the concept of '*Yiatrosafia*' to the present-day knowledge of the traditional medical system of the participants, thereby enabling the research to follow a pioneering approach of the 'Participant's View'.

Although the traditional healers, such as *Praktiki*, have virtually disappeared from the research area, several wise women and religious healers continue to provide their advice and services to the population in the rural areas of Crete.

In view of people's extensive knowledge of the traditional medical system, the inhabitants of Pírgos and Praitória are familiar with a whole range of locally available MAC plants. MAC plant species, such as Chamomile (*Chamomilla recutita* (L.) Rauschert / *Matricaria chamomilla* L. / *Matricaria recutita* L.), Sage (*Salvia fruticosa* Miller or *Salvia triloba* L. / *Salvia pomifera* L.) and the endemic Cretan Dittany (*Origanum dictamnus* L.), for example, are widely known and used in the research area for their mainly medical but also aromatic and cosmetic purposes. Although MAC plants are occasionally cultivated in pots, it is standard practice among community members to collect plants from the wild in the surrounding hills and lowlands.

MAC plants are either consumed directly or are dried and stored at home and are used, either internally or externally, for the main purpose of medical treatment. In addition to MAC plants, a number of mostly processed and at times MAC plant-based products, which are generally available in a rural Cretan households, including olive oil, raki, honey or beeswax are reported to be used as traditional home remedies. To some extent, these traditional home remedies provide the basis for local medical practices, such as the application of '*Ventuzes*', which refers to the attachment of cups to body parts in a way to extract excess blood or other fluids. Besides MAC plants and other traditional home remedies, the components of the traditional medical system available in the research area include forms of religious and spiritual medicine. While religious medicine usually involves the intermediary of religious healers and is administered in the form of prayers and practices, which are tied to the annual religious canon, spiritual medicine refers mainly to prayers and practices outside the religious canon, which are applied in a way to treat the mental disorder, known as the 'evil eye'.

Fourthly, an indigenous classification of Medicinal, Aromatic and Cosmetic (MAC) plants as well as a local MAC plant priority species list is presented in Chapter VI, Paragraph 6.2.2. In general, the elaboration of a local classification of MAC plants and the priority plant species list, which are identified on the basis of local interviews and accounts, further substantiates the focus of the present research on indigenous MAC plant knowledge as the major component of the Traditional Medical System in the utilisation of the plural medical system available in this part of

Crete. Furthermore, the local classification of MAC plants highlights the scientific dimension of the local people's knowledge as it represents an evidence-based body of indigenous knowledge, which as such underscores a unique aspect of the IKS shared by the local population.

Although in the research area, the local comprehensive concept of MAC plants in general include all those local plants, which are used for medicinal, aromatic and cosmetic purposes, people sometimes also refer to plants for specific medical purposes, known as '*Votana*', and plants used for traditional home remedies, known as '*Farmaka*'. Other plants, such as Chamomile (*Chamomilla recutita* (L.) Rauschert / *Matricaria chamomilla* L. / *Matricaria recutita* L.), Sage (*Salvia fruticosa* Miller or *Salvia triloba* L. / *Salvia pomifera* L.) and the endemic Cretan Dittany (*Origanum dictamnus* L.), are most frequently reported by the study population to refer to their aromatic and cosmetic properties for better health and well-being.

Fifthly, an indigenous illness classification, which is based on local people's perceptions and ideas of illness and disorder is presented in Chapter VII, Paragraph 7.1.3. Closely related to the people's indigenous classification of MAC plants, their illness classification similarly substantiates the focus of the present research on the importance of the 'Participants View' on indigenous classifications as a major component of in the utilisation of the plural medical system available in this part of Crete. Also, this local classification of illnesses highlights the scientific dimension of the local people's knowledge as it represents an evidence-based body of indigenous knowledge and experience, which as such underscores a unique aspect of the IKS shared by the local population. In this context, it should be noted that the elaboration of a local illness classification concentrates on local ideas, perceptions and names of illness, which have subsequently been classified according to the respective disease categories designed by the World Health Organisation (WHO 2014b). However, the construction of the local classification in the research area cannot be taken as evidence for an exhaustive indigenous illness classification, since time constraints of this study limited a complete categorisation of all local perceptions, ideas and names of illness. Notwithstanding, the research sheds light on particular names of illnesses used by the study population and certain types of locally specific diseases, such as the 'evil eye', which have been classified as 'unspecified'.

On the whole, the inhabitants of rural Crete entertain a classification of locally specific ideas of health, illness and causes of illness. In line with the overall community health approach of this research, the concept of health has been identified as a human condition, which embraces not only physical but also mental, social and spiritual well-being. On the basis of this conceptualisation of the concept of health, community members also show a tendency to adopt practices of health promotion, which are strongly embedded in the socio-cultural, religious and spiritual context of the community. In particular, specific dietary patterns, social interaction, adherence to the annual religious canon and the avoidance of extremes, such as excess of food or beverage as well as extreme weather conditions, are believed to enhance people's state of health. Accordingly, indigenous ideas of the different causes of illness are related to a variety of factors and include *i.a.* bad living and housing conditions, extreme feelings as well as confrontation with feelings of jealousy, envy or competitiveness. In view of their understanding of health and illness, as well as the different causes of illness, the inhabitants of Pírgos and Práitoria apply an array of different ideas and names to illnesses, which is unique to the research area.

Sixthly, the description of people's health care utilisation behaviour, studied from a community perspective, and highlighting the different stages of illness behaviour, leading up to the distribution of the reported utilisation rates of 'patients' over the plural medical system, is presented in Chapter VII. The household surveys, which have been conducted in the research area, generate a wealth of data on the different factors, which influence the reported patterns of health care utilisation behaviour of all household members identified as 'patients' of the sample. In particular, information is presented on the main episode of illness, which each patient reportedly experienced over a recall period of 12 months' time. The study proceeds with the

identification of the number of 'non-action patients', *i.e.* the number of respondents, who reportedly did not seek any form of medical treatment, and with the separation of this group of 'patients' from the group of 'action patients', namely those respondents, who reportedly contacted the plural medical system in order to receive treatment. Subsequently, the group of 'action patients' is described in order to provide more insight into the differences between 'internal action patients', who sought treatment in the form of self-care or through the intermediary of a non-professional health care provider, and 'external action patients', who consulted a professional health care provider. In addition to the identification of the different types of patients, the role, which the illness management group is playing during the stages of people's illness behaviour, is further described. The local patterns of transcultural health care utilisation behaviour as documented for a considerable number of patients are described, whereby the differential utilisation patterns are further highlighted from a the local community perspective. In order to adequately present the overall rates of utilisation of the plural medical system reported by all household members, who are identified as 'action patients' of the sample, the number of 'patients' is calculated into utilisation rates. With respect to the plural medical system available in the research area, a considerable number of 'patients' contacted a representative of the plural medical system more than once in order to receive satisfying treatment. By consequence, the number of utilisation rates of the 'action patients' exceeds the actual number of 'action patients' of the sample.

The overall utilisation rates of the three main sub-systems of the plural medical system reveal a rather interesting distribution, in which 324 'action patients' report a total of 452 (100.0%) utilisation rates, distributed as follows: almost half of the contacts (44.7%, n=202) are reported at the traditional medical system; nearly half of the contacts (46.0%, n=208) are reported at the transitional medical system; and nearly one-tenth of the contacts (9.3%, n=42) are reported at the modern medical system.

In view of the overall utilisation rates reported by all 'patients' of the sample, the traditional medical system forms the second most frequently contacted medical system in the research area with almost half of all reported contacts (44.7%, n=202). In general, treatment is primarily sought in the form of MAC plants and other plant-based traditional home remedies. Forms of religious and spiritual medicine are solely administered to cases, in which the patient experiences an episode of the 'evil eye'. Furthermore, the components of the traditional medical system are mainly applied through practices of self-care and only occasionally involve the intermediary of a professional health care provider, such as a wise woman or a priest. In other words, concerning the substantial contacts with the traditional medical system, respondents indicate that their relatively high level of indigenous knowledge of MAC plants as part of their knowledge of the traditional medical system itself plays a dominant role in their illness behaviour, supported by their knowledge of both the indigenous MAC plant classification and the illness classification.

Considering the overall utilisation rates reported by all 'patients' of the sample, the transitional medical system forms the first most frequently contacted medical system in the research area with nearly half of all contacts (46.0%, n=208). Utilisation of the transitional medical system refers primarily to the utilisation of non-prescribed medicines, including Over-the-Counter (OTC) medicines, as they are provided by pharmacists, drug vendors or shopkeepers. Although contact with the transitional medical system generally involve the intermediary of a professional health care provider, 'patients' occasionally applied pharmaceutical medicines through the intermediary of a member of the household or a friend, and through practices of self-care. In other words, concerning the substantial contacts with the transitional medical system, respondents indicate that their relatively high level of opinion of the transitional medical system plays a dominant role in their illness behaviour.

Taking into account the overall utilisation rates reported by all 'patients' of the sample, the modern medical system forms by far the less frequently contacted medical system in the research area with less than one-tenth of the contacts (9.3%, n=42). Since utilisation of the modern medical system generally involves the intermediary of a professional health care provider, a

considerable number of 'patients' consult the general practitioners, who visit the health posts in both research communities. Concurrently, 'patients' also tend to seek treatment outside the confinement area of the community and municipality, consulting the staff employed not only at the local health centre in the nearby community of Kharakas but also at hospitals and other health care institutions in Iraklion. In other words, concerning the very low contacts with the modern medical system, respondents indicate that their relatively low level of knowledge of the modern medical system plays a dominant role in their illness behaviour.

Seventhly, the stepwise bivariate, mutual relation, multivariate and multiple regression analyses of transcultural health care utilisation in rural Crete and the explanation of the significant interactions between various groups of factors, which act as determinants of the reported patterns of utilisation behaviour, are presented in Chapter VIII. The multivariate model of transcultural health care utilisation is applied to the analysis of data gathered during the household surveys in Pírgos and Praitória, and the analysis of the interactions between certain groups of factors, which could act as determinants of the reported patterns of utilisation behaviour, are explained in the same chapter. Prior to the quantitative household surveys conducted in the research area, a number of factors are identified during the qualitative pilot study as potential determinants of local patterns of transcultural health care utilisation behaviour. The identification of factors follows the outline of the multivariate model of transcultural health care utilisation, which has also successfully been applied to previous similar research on patterns of health care utilisation in Crete and to comparable research on behavioural patterns in different sectors of the society elsewhere around the globe. Following the development and specifications of the multivariate model and its operationalisation from concepts to factors, which are inserted as variables into the model, the construction of the quantitative questionnaire, which is used as the research instrument for the household surveys in Pírgos and Praitória, is described in Chapter III. The multivariate model of transcultural health care utilisation behaviour, which is adapted to this study, supports the applicability of the selected approach and offers an explanatory model of behaviour, which is unique to the research area.

In order to analyse the significance of the specific determinants of people's utilisation behaviour, the factors within the model are transformed into variables, which are inserted into the selected statistical programme for this kind of data analysis. By means of the bivariate analysis, the relationship of each independent variable with the dependent variables of health care utilisation is indicated.

The results of the bivariate analysis, indicating an overall differentiation in the reported health care utilisation over the plural medical system, confirm the distribution, as described in Chapter VII, and fulfil the *sixth* objective of this study. Embarking on the overall distribution of the utilisation rates of the three main sub-systems of the plural medical system, revealing the rather interesting differentiation, in which 324 'action patients' report a total of 452 (100.0%) utilisation rates, distributed with almost half of the contacts (44.7%, n=202) reported at the traditional medical system, nearly half of the contacts (46.0%, n=208) reported at the transitional medical system and less than one-tenth of the contacts (9.3%, n=42) reported at the modern medical system, the bivariate analysis is shown as to indicate the following 17 variables as significant determinants of illness behaviour: Household Size; Household Composition; Age; Marital Status; Occupation; Knowledge of the Traditional Medical System; Knowledge of the Modern Medical System; Opinion on the Transitional Medical System; Annual Household Income; Annual Expenses on Health Care; Health Status; Reported Disease; Severity of the Reported Disease; Duration of the Reported Disease; Accessibility of Institutions of the Traditional Medical System; Accessibility of Institutions of the Transitional Medical System; and Impact of the Current Economic Situation.

In addition to the bivariate analysis, the innovative model of the 'mutual relation analysis' introduced by Slikkerveer is also described in Chapter VIII for the collected data from the household surveys in Pírgos and Praitória, clearly indicating the mutual relationships among

categories of significant determinants of utilisation behavior (*cf.* Slikkerveer & Lionis 2012). Figure 8.1 shows the statistically significant mutual relations between variables, represented as blocks in the model.

The following multivariate analysis, in which all relationships and interactions among the variables in the model are similarly described in Chapter VIII, provides further statistical support for the findings of the above mentioned significant variables in the bivariate analysis. The determinants, which emerge from the stepwise quantitative analysis in Chapter VIII as to possess a certain degree of significance, can be summarised as follows:

Socio-demographic variables:	<i>Household size</i> <i>Household composition</i> <i>Age</i> <i>Marital status</i> <i>Occupation</i>
Psycho-social variables:	<i>Knowledge of the traditional medical system</i> <i>Knowledge of the modern medical system</i> <i>Opinion on the transitional medical system</i>
Enabling variables:	<i>Annual income</i> <i>Annual expenses for health care</i>
Perceived morbidity variables:	<i>Health status</i> <i>Reported disease</i> <i>Severity of the reported illness</i> <i>Duration of the reported illness</i>
Institutional variables:	<i>Accessibility of institutions of the traditional medical system</i> <i>Accessibility of institutions of the transitional medical system</i>
Intervening variables:	<i>Impact of the current economic situation</i>

A graphic representation of the projection of the component loadings of the two sets of variables onto the canonical space with a total of 30 variables on two dimensions (N=452) is shown in Figure 8.2.

Finally, the multiple regression analysis is also described in Chapter VIII. The multivariate analysis is extended to develop an explanatory, analytical model of transcultural health care utilisation by means of assessing the correlation between the different blocks of factors identified in the model. While bivariate and multivariate analyses illustrate the relationship between different variables in the model, the multiple regression analysis calculates the maximum correlation between the blocks of factors. Table 8.9 presents a list of all multiple correlation coefficients, which are calculated separately for all possible combinations of blocks of factors for each dimension.

The results of the multiple regression analysis furthermore show that the block of the perceived morbidity factors and the block of the predisposing socio-demographic factors correlate strongly with all blocks of independent factors and moderately with all blocks of dependent factors. The block of the intervening factors, which includes the variable 'Impact of the Current Economic Situation', also correlates rather strongly with all blocks of independent factors. Figure 8.3 presents the final model of Transcultural Health Care Utilisation indicating the strength of the correlations between the blocks of variables in the model.

The three additional objectives of the study, *i.e.*: *eighthly*, the description of the theoretical implications of the study; *ninthly*, the description of the methodological implications of the study; and *tenthly*, the description of the practical implications of the study are presented below in respectively Paragraph 9.2.1, Paragraph 9.2.2 and Paragraph 9.2.3.

9.2 Implications of the Research

9.2.1 Theoretical Implications of the Research

This study seeks to provide a substantial contribution to the multidisciplinary fields of medical anthropology and neo-ethnoscience, notable ethnomedicine. The present research adopts an *emic* perspective and applies the concept of *Indigenous Knowledge Systems* (IKS) in its research strategy in order to gain an understanding of local systems of knowledge, practice and belief shared by the population with regard to their local patterns of transcultural health care utilisation behaviour in this part of Crete. The concept of indigenous medical knowledge of the study population refers primarily to the combination of ancient and present-day knowledge of MAC plants, used for centuries in the ethnomedical system of 'Greek Humoural Medicine', based on the early knowledge and application of home remedies in ancient Greece, documented by such scholars as Pedanius Dioscorides (40-90 A.D.), the 'Founding Father of Phytotherapy'. As the indigenous systems of knowledge and practice are empirical, evidence-based, experimental and systematic, they are also defined as scientific knowledge systems, similar to 'modern knowledge systems'. The empirical and evidence-based aspects of the indigenous medical knowledge, which are shared by the inhabitants of the two research communities to a greater extent involves local knowledge and practice of the utilisation of locally available Medicinal, Aromatic and Cosmetic (MAC) plants, transferred over many generations since the early settlement of inhabitants in the island.

The theoretical implications of this study in rural Crete encompass the support from the collected research data for the theorem that the accumulated body of indigenous people's knowledge of MAC plants in rural areas provides one of the major contributions to the collection, preparation and use of plant-based medicines as the major part of the prevailing system of traditional medicine. Such conclusions of other studies with regard of the huge contribution of medical plants to not only traditional but also to modern health care systems have been made by numerous scholars, including: Evans Schultes & Raffauf (1990); Balick *et al.* (1996); Van Seters (1997); Bodeker (1999); (Posey 1999); Quah & Slikkerveer (2003); Bogers *et al.* (2006); and Slikkerveer (2006).

In addition, this study also supports the theorem that the accumulated body of indigenous people's knowledge of MAC plants in rural areas provides one of the major contributions to the collection, preparation and use of plant-based medicines as a similarly major part of the prevailing system of transitional medicine. The direct relation between the utilisation of the traditional medical system and the transitional medical system can be explained by the nearly equal application in both systems - as opposite to the modern medical system - of plant-based ingredients and herbal medicines (*cf.* Slikkerveer 1990; 2003).

Furthermore, the aspects of a general positive opinion reported by the respondents from both research communities with regard to the provision as well as the satisfaction of traditional and transitional treatment with this kind of plant-based medicines indicate that the indigenous knowledge and practice of MAC plants are significantly contributive to the improvement of the overall provision of health care in rural communities (*cf.* Balick *et al.* 1996; Van Seters 1997; Quah & Slikkerveer 2003; Slikkerveer 2006).

Another interesting theoretical implication of this study in Crete refers to focus on local patterns of MAC plant utilisation, which sheds light on the concepts of bio-cultural diversity conservation and sustainable resource management. On the whole, a part of the wider loss of worldwide biodiversity is shown also to occur in the Mediterranean Region by the year 2100 largely as a result of changes in the use of land. In Crete, the loss of biodiversity is likely to cause a reduction in the profusion of springtime flowers and to provoke a degradation of the cultural value of the landscape (*cf.* Allen *et al.* 2006). In view of these predictions, it is likely to assume that a loss of bio-cultural diversity of MAC plants will affect the related patterns of utilisation of these natural resources. In this respect, it appears that the inhabitants of Crete have

used plants for medical purposes since the earliest days of human settlement in the island. Clearly, these findings suggest that people interact with the natural environment in a way also to render its resources available to future generations and hereby adhere to the principles of local management and conservation of MAC plant biological diversity. Indeed, the sample population shares considerable knowledge on the sustainable utilisation of MAC plants, which is embedded in the socio-religious context of the community.

Since the profession of traditional health care providers, who are known for their conservation practices of MAC plants, is disappearing in Crete, practices of the sustainable utilisation of MAC plants to a greater extent involve patterns of self-care, showing that the local medical systems of knowledge, practice and belief are related today to the members of the community, rather than to professional health care providers. In line with the conservation of natural resources, the practices of utilisation of MAC plants also contribute to the conservation of cultural diversity, namely to the preservation of local systems of knowledge, practice and belief in relation to the utilisation of MAC plants. The present study not only sheds light on local patterns of bio-cultural diversity conservation, but it also contributes in essence to the conservation of bio-cultural diversity, as local systems of knowledge, belief and practice are also documented in this study. As such, this research may provide an incentive to future studies on people's knowledge and patterns of utilisation of MAC plants in Crete focused on the role of IKS concerning MAC plants for conservation of the bio-cultural diversity of the island. As Vokou *et al.* (1993: 187) mention: '[...] *[The] natural resources, which are the basis of the traditional medicine, are still here and should be re-evaluated*'. In this respect, this study also supports evidence from previous studies elsewhere, which have shown that indigenous knowledge and practice of useful plants contributes to the conservation of forest, as highlighted by Akrele *et al.* (1991); Heywood (1999); and Agung (2005).

9.2.2 Methodological Implications of the Research

A major methodological implication of this study refers to the fact, that the 'Leiden Ethnosystems Approach', as it has been applied to the present study, again shows to allow for a detailed analysis of local systems of knowledge, practice and belief as well as for an assessment of notably past and present patterns of behaviour across different sectors of the society in a particular research area. On the basis of this rather comprehensive research approach, paying attention to the approach of the 'Participants View' (PV), the 'Field of Ethnological Study' (FES) and the 'Historical Dimension' (HD) with regard to the object of study, it has been possible to describe and understand all relevant factors, which play a role in the local people's utilisation of the plural medical system available in the communities of Pírgos and Praitória.

Similarly, the analytical methodology selected for this study of the three medical systems operating in the research area, *i.e.* the traditional, the transitional and the modern medical system, is based on the multivariate model of transcultural health care utilisation, which is adapted to this kind of research. The comprehensive stepwise analysis of collected data encompasses a bivariate analysis, a mutual relations analysis, a multivariate analysis and a multiple regression analysis.

Overall, the remarkable analytical results of this study, elaborated above in Paragraph 9.1, support previous research in the field of IKS-related studies and confirm that the conceptual methodological framework and applied analytical model of transcultural health care utilisation are very well developed for this kind of medical-anthropological and ethnomedical research. Furthermore, the statistical analysis enables the differentiation between 'internal' and 'external action patients', highlighting practices of self-care and patterns of consultation of a non-professional health care provider.

In addition to providing a rather sound basis for extending the geographical focus of the study of patterns of health care utilisation behaviour to communities elsewhere in Crete, this research is expected to stimulate the comparison among and within population groups living elsewhere in rural Crete.

In other words, the present research methodology applied in the study offers a point of embarkation for cross-cultural comparison of similar behavioural patterns shown in other regions of Crete (*cf.* Koutis *et al.* 1993; Geitona *et al.* 2008).

9.2.3 Practical Implications of the Research

In addition to the theoretical and methodological implications of this study indicated above, the present research also seeks to provide a practical contribution to the promotion of community health in this part of Crete and beyond. In particular, the community-based approach of this study to analyse local patterns of transcultural health care utilisation sheds light on locally perceived health care needs and shortcomings. In this way, the results of this study, particularly the analysis of the different medical systems available in the research area and of the various patterns of health care utilisation reported by the study population, have a predictive value for health care planning purposes. This study makes an effort to present each medical system existent in the research area within the socio-cultural context of the community, thereby generating a practical community-oriented perspective on medical pluralism. Concurrently, patterns of health care utilisation behaviour are analysed from the respondent's rather than the health care providers' point of view, offering a sound basis for the promotion of community health in the research area and beyond. In particular, region-specific data and community participation are identified as crucial for improving health care delivery strategies and policies, particularly in rural areas, supporting previous practical-oriented research (*cf.* Koutis *et al.* 1993; Chatziarsenis *et al.* 1999; Antonakis *et al.* 2006). As Mossialos *et al.* (2005: 152) state: '*Overall, it is important to consider the political, economic and cultural context of the Greek health system when analysing reform efforts and posing suggestions for future policies*'. In other words '*it would be unrealistic and ineffective to apply solutions used in other health systems, as one cannot ignore the history of health reform in Greece, its highly politicised system, cultural idiosyncrasies and the vested interests involved in policy development*' (*ibid.*: 165).

In addition, the present research provides substantial evidence that the inhabitants of Pírgos and Práitoria share a substantial amount of knowledge of plant-based medicine and make considerable use of the traditional medical system, in which the indigenous knowledge of locally available MAC plants forms a major component. In this way, this study also links up with the recent policies of the World Health Organisation (WHO), which acknowledge that the components of the traditional medical system are usually embedded in the social, religious and spiritual context of the community and as such offer a vivid component of everyday village life (*cf.* WHO 2002a). Furthermore, this research aligns with strategies on the further development of plant-based medicine in order to ensure improved community health care in rural communities.

Within its recent strategy, WHO (2002a) highlights the advantages of the utilisation of traditional plant-based medicine in terms of its accessibility and affordability in rural areas. As Alcorn (1995: 11) observes: '*Encouraging the use of proven herbal medicines among people who do not have access to pharmaceuticals can [...] improve rural health care in many areas*'. In addition, given the current difficult economic development in the research area, people's knowledge and utilisation of MAC plants may not only relieve the financial burden concerning expensive modern medicines, but may also offer a source of income, particularly in the tourist sector (*cf.* Dijkstra 2005).

In this context, the present study also offers an impetus for the integration of the traditional medical system with the transitional and the modern medical system available in the research area, not only to thereby revive the significant position of the traditional medical system, which it had occupied since the earliest days of human settlement in this part of Crete, but also to provide a more patient-oriented approach towards community health, which takes local knowledge, practices and beliefs about health and illness seriously into account. Since the study embarks on the recent WHO strategy of integrating traditional and modern medicine, specifically in developing countries, it links up with the integrated development policies and strategies,

which aim at achieving *i.a.* an eradication of extreme poverty and hunger, a reduction of child mortality, improvements in maternal health, the eradication of certain diseases and an advance of environmental sustainability, as highlighted within the *Millennium Development Goals* (cf. United Nations 2014). As the study likewise implies that a joint effort to develop such form of community health will pertain into more comprehensive health services, it supports previous research by Canary (1983: 100) who observes: *'Joint efforts are essential for mutual improvement and to ensure that adequate services will be available to all peoples of the world'*. Furthermore, this community health approach supports improvement of the development of diagnostic and treatment guidelines towards the expectation of which is likely to result in a better quality of care as well as reduced referrals and costs (cf. Blum & Blum 1965; Canary 1983; Lionis & Trell 1999; Slikkerveer 2006; Lionis *et al.* 2009; Oikonomou & Mariolis 2010; Oikonomou & Tountas 2011b; Sbarouni *et al.* 2012).

Additionally, the impact of the current economic situation provides considerable impetus to the development and implementation of policies, which aim at improving community health in the research area. In other words, the government is confronted with a general restructuration and an overall examination of the sustainability of health care policies, which may provide opportunities to take renewed action towards promoting community health (cf. Martin-Moreno *et al.* 2010). As Geitona *et al.* (2008: 368) observe: *'Greece is among the European Union member states that preach that one of their health system aims is to increase patients' choice and participation'*. In this respect, it has been suggested that costs of transportation to health care facilities or losses of income due to illness are covered by health insurance, while higher taxes are levied on unhealthy goods such as tobacco or alcohol; and that investments are channelled towards disease prevention and social welfare (cf. Hanepen 1997; Martin-Moreno *et al.* 2010).

Finally, it is hoped, that the various implications of this study of the significant role which indigenous knowledge of MAC plants plays in the process of transcultural health care utilisation, and in particular in the traditional and transitional medical systems in the research area will be further studied and integrated into comprehensive community health programmes for the future. In this way, this study hopes to attribute a new significance to the concept of *'Yiatrosophia'* as the indigenous medical wisdom of the Cretans concerning the knowledge and practice of MAC plants for future community health development, pertaining to the ultimate improvement of the health and well-being of the local population of the two research communities Pírgos and Praitória in rural Crete, as well as elsewhere in Greece and in other culture areas of the world.