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Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Medicine

journal homepage: <http://ees.elsevier.com/apjtm>Review <http://dx.doi.org/10.1016/j.apjtm.2017.06.013>

Exploring on the elderly health management model in tropic area

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ARTICLE INFO

Article history:

Received 16 Mar 2017

Received in revised form 18 Apr 2017

Accepted 21 May 2017

Available online 15 Jun 2017

Keywords:

Tropical regions

Old age

Health management mode

ABSTRACT

In this article, based on the characteristics of tropical area, we analyze the beneficial and the disadvantage of tropical area to human health, points out the existing problems in elderly health management pattern in the tropics area, accordingly we discuss how to establish tropical characterized elderly health management, and put forward constructive suggestions.

1. Introduction

1.1. Tropical climate characteristics

Area located in on both sides of the equator, in the area between the north and south tropic of cancer is called the tropics. The tropics area account for 39.8% of the total area of the world. At the age of strong sunshine in the region, the climate is hot, high temperature climate characteristics embodied in the year, range is very small, there is no clear four seasons change, a relatively hot season and cold season and dry season or rainy season.

1.2. Benefits of the tropics to human health

The natural environment and air quality is good. In addition to the tropical desert climate, tropical other types are high

temperature and rainy climate, very suitable for vegetation growth. Plants has a very important role for adjusting the content of oxygen and carbon dioxide from the atmosphere of the world's, therefore, mostly tropical air is fresh, and with excellent ecological environment.

It is sunny, spring-like all year round. Due to the high temperature all the year round, so people can get rid of the heavy winter coats and cold discomfort. This is beneficial for rehabilitation of some chronic diseases, rheumatoid disease, and respiratory diseases. Therefore, tropical climate has attracted a large number of tropical frigid and temperate regions of the old man.

Besides of few places, most tropical areas are with sparse population, less big cities, and slow economic development, therefore with steady pace and less stress of life. Life without too much stress and tension, it is especially suitable for old people.

Tropical climate has enough resources of sunshine and heat, crop growth cycle is short, the natural environment is unique and no pollution, therefore, tropical area is rich in a variety of unique tropical fruit taste, ingredients also mostly fresh tunnel and rich nutrition. Health food is very beneficial to the health of the body.

1.3. Risk factors for human health in the tropics

Tropical diseases such as all kinds of parasitic diseases, opportunistic infection of immunocompromised patients, rare infectious disease, and the popularity of some of the newly

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Peer review under responsibility of Hainan Medical University.

Foundation project: It is supported by the Ministry of education, the Ministry of civil affairs and the State Planning Commission for health, the core curriculum for the profession of the elderly service and management "the Elderly Health Management" and the construction of the national teaching resources database.

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discovered infectious diseases have adverse effects on in the tropic population.

The humid tropical climate is easy to cause heat stroke. The sunshine and strong ultraviolet ray could prone to sunburn. Air-condition disease incidence is increased.

Tropical zone has more mosquitoes. Many toxic and mosquito will spread disease.

Affected by the climate, Tropic zone is tropical typhoon and drought prone areas. The occurrence of disasters will harm the human health.

2. Existing problems of health management mode in tropical regions

2.1. Neglecting of tropical diseases

At present, the tropical regions of sub-saharan Africa (Sub-Saharan Africa, SSA) is the world's most underdeveloped areas [1], according to statistics of world bank, 51% of the population in this region costs less than \$1.25 a day, 73% cost less than \$2 [2]. Because of poverty and environment pollution, about 500 million people are threatened by tropical diseases such as soil nematodes infection, schistosomiasis, lymphatic filariasis, onchocerciasis [3,4]. The elderly due to the low immunity and more likely to be infected with tropical diseases caused by chance disease-causing pathogens, some new tropical infectious disease serious threat to the elderly health.

2.2. Ignoring of the environmental factors in the concept of health

In 2017, according to the statistics of world health organization, about 12.6 million people worldwide are killed due to environmental factors each year, the death toll from environment accounted for 23% of all deaths worldwide, which is located in tropical regions of Southeast Asia area, the western Pacific region and the African region, which occupies the top three regional distribution. Fifty to seventy five-year-old people is the biggest crowd that affected by the environment, the most common cause of death is stroke, noncommunicable diseases such as ischemic heart disease, accident harm.

2.3. Existing health management mode can't meet the health needs of old people in the tropics

Health management mode of the function is not good, it is not according to the characteristics of the tropical regions of the elderly health and could not supply personalized health services, characterization and the connotation of health management is not strong, the service object is not comprehensive, constrained extension development, affect the effectiveness of the health management mode.

3. Establishment of geriatric health management in tropical areas

According to the concept of health management, we should combine the particularity of tropical area from a health detection to health assessment and intervention of health management mode, the health management model should be prevention and health care, rehabilitation, health care for the elderly classification

integration services, including physical health, mental health, social health and environmental health, comprehensive health management content [5].

3.1. Health examination for older people in the tropics

To offer free service, regular physical examination for the elderly and to establish health records. The establishment of health record should meet medicare demand for the older people, be supported by information technology. The information construction of comprehensive management of personal information will collect by health care system. The file content should include the medical history, family history, medication history, physical examination report, immunity, eating habits, habits, professional characteristics, city or area of life, living environment, mental health examination, health care plan implementation, etc, and to keep long-term health records and update in time. It will fully understand and grasp all the information in the elderly health problems, realize the seamless service, and accurate management of health and disease.

3.2. The health assessment of the elderly in the tropics

To develop a health scale to assess the health of the elderly in the tropics, when making health assessment scale for the introduction of the concept of 'quality of life' to evaluate health risks, a representative of scale is developed by the world health organization quality of life measurement scale and WHOQL – 100 and WHOQL-BREF. The tests cover the determination of the content of the health-related quality of life of five areas: physiological health, psychological state, independent ability, social relationship and the surrounding environment [6]. Tropics of elderly health assessment scale should develop according to the tropical region condition, social economic and cultural background, different target groups, and the purpose of the health management of the elderly health evaluation content of emphasis. For example add the evaluation of the risk of tropical diseases. Older people are easy to get opportunistic infections caused by immune suppression and develop all kinds of tropical diseases, therefore assessment scale should be measured for the elderly immunity assessment. According to the environment on the influence factors of health and the particularity of the tropics, it should also be strengthened in health assessment for the elderly to evaluate living water, air, determination and evaluation of vegetation and soil.

3.3. Health interventions for older people in the tropics

3.3.1. Health interventions for older people in the tropics with physical health

In many tropical countries exists the problem of insufficient medical resources. In order to effectively integrate use of limited resources of health management, according to the characteristics of the elderly health management, we can establish a series of rehabilitation, preventive care services including the prevention, treatment, rehabilitation and health care level hierarchical 'one-stop' health management system, which have acute hospitalization, recovery treatment, short-term hospitalization, community rehabilitation, day care and family rehabilitation. In this system, the first priority is to establish a set of this system that has the characteristic of the tropics multi-level medical health

management institutions [7]. Inside this system, on the basis of the elderly body evaluation, implementing agencies at all levels under the system can make grading referral, and provide seamless health management services for the elderly.

The core of the system is reasonable configuration of talents. With the general practitioner as the core to establish the high quality talent system including nurse practitioner, health management division, rehabilitation doctors, dietitians, psychological consultant, sports coaches and other professional talents; To pay attention to the development of community geriatric medicine talented person; To develop a comprehensive rehabilitation program and 'community care' program [8,9], To give full play to the long-term care function of the community; To development with the tropical characteristics 'camp' [10], To integrate the rehabilitation treatment, health course, and tropical medical tourism elements, and play its function of rehabilitation, prevention and health care; To establish professional institutions, places and personnel to conduct quarantine treatment and care for patients with tropical diseases; The research institutes and teams will focus on the development of tropical diseases, drugs and vaccines, and the application of vaccines for tropical diseases; Based on the characteristics of tropical climate, integrating the concept of 'people-oriented' and 'man-machine unity', to design the intelligent wearable devices for the elderly [11].

3.3.2. Elderly mental health intervention in tropical areas

With the aging of the increase, there are more and more 'empty nest elderly'. The elderly cannot adapt to the change of social role and the relationship, showing anxiety, depression, loneliness, loss, sleep disorders and a series of psychological problems. In tropical areas, the 'migratory birds' old people away from the familiar environment, relatives and friends, have been emotional communication problems, lonely, boring and other issues [12]. Therefore, the elderly should have mental health intervention and enhance the positive experience of life. Beth Azar said: 'Lifelong learning, participation in the psychological and physical activities and appropriate work is the protection of healthy living for the elderly' [13]. Therefore, we should advocate "active aging", develop the potential of the elderly, in accordance with their own needs, abilities and hobbies to actively participate in social activities, so that they continue to experience the sense of social values in the process of adequate protection and care.

For the mental health of the elderly, we can build a new model called 'simulated family'. We build endowment institutions, communities and kindergartens together, so that living in a certain area within the retired elderly, 'empty nest elderly', 'migratory birds' as the first group; kindergarten children as the second group; and professional pedagogy, psychology teachers and workers as well as rehabilitation nurses as the third group. Tripartite group forms a 'simulated family'. Older people can use their own expertise and ability to help with children and interact fully with children. In the process, the elderly can also enjoy the warmth of the family, and enjoy the positive psychological experience and promote mental health.

In addition, the tropics are typhoons and drought prone, especially serious typhoon disaster is easy to cause psychological trauma to the elderly, so many elderly people suffering from Post-traumatic stress disorder, so the government should be equipped with a professional psychological counseling team in

time for the elderly psychological counseling. Local governments should improve services such as transport, shopping, and medical care as soon as possible in order to avoid negative emotions in the elderly.

3.3.3. Guidance and service of healthy lifestyle for the aged in the tropics

The world health organization once pointed out that many people died of their unhealthy lifestyle instead of disease. Therefore, we should give guidance and service of healthy lifestyle to the aged.

By conducting systematic, planned and pertinency health education to encourage and guide the aged to choose the healthy lifestyle, popularize the medical health knowledge, grasp the common sense of disease prevention and control, and improve the self-care ability of the aged. The nation should print the health handbook for the aged. And the handbook should include the common disease knowledge of the aged, the life routine guidance, how to use medicine properly, control weight and so on [14]. The TV station should play the medicare knowledge every week and hold medicare knowledge competition terminal.

It is necessary to equipped with a medical team including dietitian. The dietician should provide nutrition counseling, assessment and education for the aged in the community [15]. The government give financial and policy support to the nursing facility and providing nutritional meals for the aged who are in weakness and live alone. We should constraint the nursing facility to equip the dietitian. The meal and nutritional products for the aged should be demand oriented. If the aged get nutrition counseling and service in a formal organization, the charge of it should brought into the medical insurance [16]. We should prepare a individual nutrition program that combine the result of health assessment with tropical features. There are wide variety of fruits and vegetables in the tropics. And the ingredients are of naturally good quality. The government should try to provide the aged with the local ingredients, fresh fruits and vegetables, etc.

We should establish scientific fitness guidance department at all levels. We should also build a health service model which combines physicina and medicine. Then, combine the climate with environment of tropics and we should make individual sport plan for the aged according to their mobility and health condition. Besides, the aged need professionals to guide and help them to build exercise habits. We should pay attention to research and develop the intelligent wearable sport aid system for the aged to protect the health of them.

3.3.4. Environmental health promotion of elderly in tropical areas

Environmental health promotion guides us to connect our environment with health, reduce the impact of this growing population group on the environment, the real integration of ecological factors in health place in the course of practice. Therefore, the health management of the aged in tropical areas should improve the environment by reducing waste and effective resource utilization making the environment more healthy for the aged.

Firstly, prevention of environmental pollution and maintenance of environmental health with low carbon measure; Active use of transport; provision of safe water and good sanitation facilities; Changing consumption patterns; less hazardous chemicals; reduce garbage; save energy; clean fuels and use of

clean technology for cooking and illumination; enactment of antismoking legislation, reduce second-hand tobacco smoke; insist on incorporating health work into all policies.

Secondly, the elimination of environmental factors detrimental to health in tropical areas. Setting sun shading facilities in the elderly living places, prevent exposure; the design of sun protection against the aged residence; the design of sunscreen for the aged in sports venues; adopting ventilation design to avoid prolonged stay in air-conditioning environment. Elderly people with rheumatism and skin diseases try to avoid living in moist surroundings by the seaside.

Thirdly, selection and utilization of environmental factors conducive to health in the tropics. To make full use of the tropical climate advantages and environmental advantages, to choose a place with beautiful environment and fresh air for the construction of the elderly community medical rehabilitation and pension institutions; promoting outdoor ecological sports elderly; To development ecological sports; take advantage of the environment to the develop health projects, such as health SPA, forest health, volcano stone nursing and other health products.

4. Suggestions

4.1. To improve and perfect health insurance system for the elderly in tropical area

A health security system needs to be established, which composed by an essential system and two substantial supplements (e.g. pharmaceutical subsidy plan and private insurance plan) [17], universal health insurance (UHI) system is the essential system of medical health care. The pharmaceutical subsidy plans from the local governments are the key elements of the UHI system, and the private insurance plan, voluntary to the civil servants, is supplemental to it (UHI). It needs to integrate the current health resources to build the tier administration systems of health security for the elderly. It is necessary to establish health insurance subsidy plans tailored for the aging vulnerable population, to improve and perfect the health security system among provinces and nations, in order to provide health care services for the ‘migratory birds’ elderly in the tropical area and meet the demand of medical tourism services.

4.2. Reinforce the traditional health care with tropical area characteristics

The traditional health care in some tropical countries and regions has strengths in health management for the elderly, such as concept of ‘preventive treatment of diseases’ in Traditional Chinese Medicine (TCM), with advantages to care for sub-health conditions, which could be developed as health management programs with characteristic TCM, providing services by TCM care for the elderly with chronicle diseases or and sub-health conditions [18]. The art of Yoga from India is the most ancient oriental physical strengthening technique, with a set of complete maintenance methods from body to spirit. People can maintain physical and mental health through Yoga practice, therefore we need to promote Yoga in order for it to play a role in health management for the elderly [19]. Pharmacology of traditional ethnic Africa is scientific practice based on exploration of pharmacology of drugs, poison and

anesthetic plants by the Africans. Some medical plant extracts have significant treatment effects on tropical diseases, cancer, diabetics and arthrolithiasis. For example, dietary supplements made from traditional African herbs *Harpagophytum procumbens* [20] have effects on rheumatism and lower back pain. Combination of Traditional African Medicine and modern medicine needs to be promoted, and research and development on OTC herbal preparations of Traditional African needs to be reinforced.

Conflict of interest statement

We declare that we have no conflict of interest.

References

- [1] Brooker S, Clements AC, Bundy DA. Global epidemiology, ecology and control of soil-transmitted helminth infections. *Adv Paras* 2006; **62**: 221-261.
- [2] Wang L, Gu JZ. The prevalence, distribution and harm of the neglected tropical diseases in sub Saharan Africa. *Chin Trop Med* 2010; **10**(3): 312-313.
- [3] Fenwick A, Molyneux D, Nantulya V. Achieving the millennium development goals. *Lancet* 2005; **365**(9464): 1029-1030.
- [4] Olsen A. Efficacy and safety of drug combinations in the treatment of schistosomiasis, soil-transmitted helminthiasis, lymphatic filariasis and onchocerciasis. *Trans R Soc Trop Med Hyg* 2007; **101**(8): 747-758.
- [5] Martelli G, Di Girolamo C, Zammarchi L, Angheben L, Morandi M, Tais S. Seroprevalence of five neglected parasitic diseases among immigrants accessing five infectious and tropical diseases units in Italy: a cross-sectional study. *Clin Microbiol Infect* 2017; **23**(5): 335.e1-335.e5.
- [6] Yang C, Wang X, Gu H, Liu L. Current status and progress of the comprehensive assessment scale for elderly health. *Chin Gene Med Sci* 2016; **19**(9): 991-996.
- [7] Wang X, Wang L, Guo Q. The integration of medical care maintenance-the construction and development trend of new health care management system for health care combining with age. *Health Res* 2017; **1**: 33-37.
- [8] Zhang Y. Study the needs and influencing factors of community health care and prevention in the community. *World Latest Med Inf* 2016; **16**(90): 297-298.
- [9] Liu D, Tian Q, Zhao H, Zeng Y. Analysis of the necessity of community health management for elderly patients with mild cognitive impairment and construction of project management model. *Chin J Gerontol* 2017; **37**(7): 1792-1794.
- [10] Yin J, Zhou Y, Zhang T, Yao M, Peng X. Study on ‘health hut’ mutual application of classroom health management mode in elderly patients with insomnia. *Public Med Forum Magaz* 2015; **19**(20): 2826-2828.
- [11] Appelboom G, Camacho E, Abraham ME, Bruce SS, Dumont EL, Zacharia BE, et al. Smart wearable body sensors for patient self-assessment and monitoring. *Arch Publ Health* 2014; **72**(1): 28.
- [12] Xie M. Health management model of the elderly population of migratory birds in Sanya. *J Trad Chin Med Manag* 2016; **24**(15): 152-153.
- [13] Azar Beth. Use it or lose it. *Monit Psychol* 2002; **33**: 5.
- [14] Zhang LJ, Zhang M. Intervention effect of health education on elderly hypertensive patients in community. *J Beihua Univ Natur Sci* 2017; **18**(3): 386-388.
- [15] Hou Y, Xu RN, Ding X, Zhou JC, Zhang F, Jiang TT, et al. Effect of nutrition and health education on nutritional status and quality of life in the elderly. *Chin J Clin Health* 2016; **19**(5): 471-474.
- [16] Zhang HM. Characteristics and inspiration of Singapore medical care system. *Chin Gener Pract Nurs* 2015; **13**(21): 2076-2077.
- [17] Zhang KL. Introduction of rural health care system in Australia. *Chin Health Serv Manag* 2008; **25**(2): 138-140.

- [18] Tang M, Wu HB. Study on the mode of health care for Chinese medicine based on the combination of medical care and rehabilitation. *Health Econom Res* 2017; **2017**(5): 22-24.
- [19] Kang YM, Komakech R, Karigar CS, Saqib A. India compared with Korean traditional medicine. *Asia-Pac Trad Med* 2017; **13**(8): 1-2.
- [20] Li AQ. *Harpagophytum procumbens* LI174 efficacy and tolerability of chronic non radicular back pain. *World Phytomed* 2002; **17**(6): 266-277.