RESEARCH ARTICLE

Study on factors responsible for high life expectancy in the elderly population in the peripheral area of northwest Sinharaja forest

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Abstract: Sinharaja, a world heritage forest reserve, is one of the least disturbed and biologically unique lowland rain forests in Sri Lanka. Although a forest providing a conducive and healthy environment for high life expectancy is a general consensus, no such studies have been carried out. The main objective of the study was to find out the factors responsible for high life expectancy in the elderly population of northwest (NW) Sinharaja forest peripheral area. Two Grama Niladhari Divisions (GN) comprising six villages in the NW slope of Sinharaja forest were taken as the study area in the Kalawana District Secretariat Division. Of the total elderly population of 80 in the six villages, 61% of the elderly persons of both sexes of over 60 years were selected randomly for the study. A house to house approach based on a questionnaire survey was the primary investigation method. Interviews, case studies, and field observations were supplementary methods used. Simple statistical analysis such as percentages was used to interpret the data. The research was carried out between May-December 2011. Results show that the oldest in the sample was 99 years and in good health. Good quality food with indigenous knowledge on their food value, occupations directly linked to the forest which entailed long walks and fresh air, time for leisure, a simple life style without stress and tension has contributed to a higher life expectancy in the elderly population. Their memory was sharp and remembered over 100 food items gathered from the forest.

Keywords: life expectancy, rainforest, indigenous knowledge, elderly population

Introduction

Sinharaja forest reserve is one of the least disturbed and biologically unique lowland rain forests in Sri Lanka. This forest covers an extent of about 11187 hectares from east to west. The length of the forest is about 21 km and width from North to South is about 3.7km (Wijayawardena, 2010). It was declared a Man and Biosphere Reserve (MAB) in 1978, as a representative tropical humid evergreen forest eco system in Sri Lanka and has been recognized by UNESCO as part of its International Network of Biosphere Reserves. It was declared a world heritage site in 1989 and is situated in the southwest lowland of the wet zone of the country in the districts of Ratnapura, Galle and Matara. Ageing process in life is associated with progressive physiological, functional and pathological changes affecting their physical, mental, emotional and social well being. They manifest in changed physical and psychological performance, functional ability affecting daily living, mental and cognitive processing impacting on the productive aspect and on the quality of life. These occur in a milieu of cultural and religious values, changes in family and social structure (Senaratne, 2004).

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Materials and Methods

Two Grama Niladhari Divisions (GN) comprising six villages in the NW slope of the Sinharaja forest was selected for the study. They are Kudawa, Pethiyakanda, Pitakele and Buthkanda villages of Kudawa GN division, and Suduwelipotha and Miyanapalawa villages of Weddagala North GN Division (Table 1and Figure 1). These GN divisions fall into the Kalawana District Secretarys Division in the Ratnapura District of the Sabaragamuwa Province. Of the total elderly populations of 80 persons in the six villages, 49 or 61.0% of the elderly persons of both sexes of over 60 years were selected randomly for the study. A house to house approach using a questionnaire was the primary investigation method adopted in the study. Interviews, case studies, and field observation were the other supplementary methods used. Simple statistical method such as percentages was used to interpret the data. The research was carried out between May –December in 2011. Table 1 shows the basic information regarding the elderly people in NW slope of Sinharaja forest.
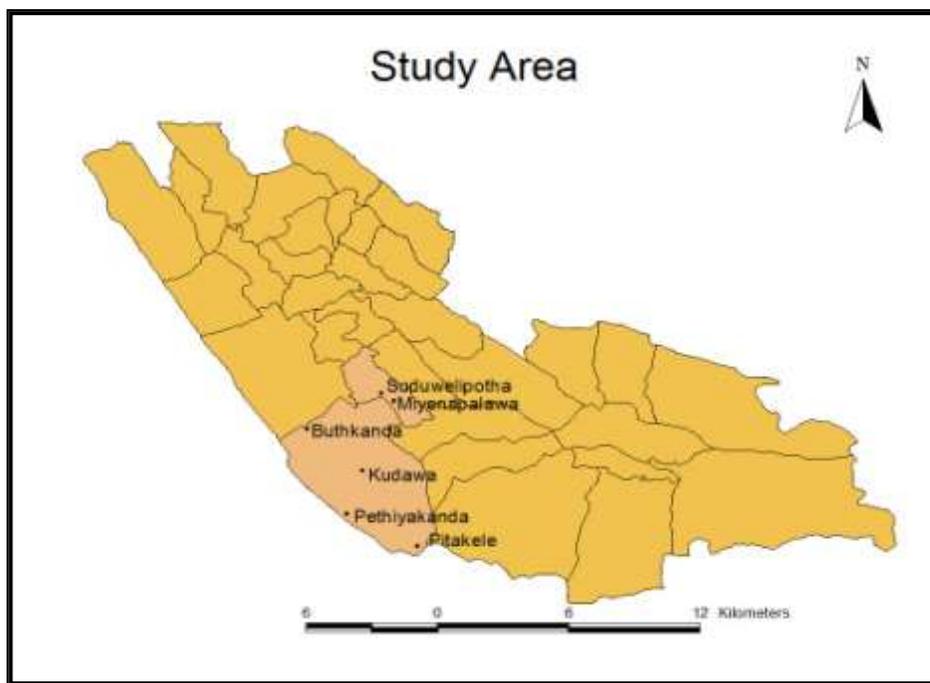

Figure 1. Study area (Source: Kalawana Divisional Secretariat, 2012).

Table 1. Basic information of the elderly people in the NW slope of the Sinharaja forest periphery (Source: Field Survey, 2011)

Village	Total Population	No. of persons over 60 years	Selected Sample	Age (years)
Kudawa	237	15	08	65-83
Pethiyakanda	229	15	10	64-84
Pitakele	146	10	07	67-97
Buthkanda	66	17	08	63-68
Miyanapalawa	47	13	07	69-87
Suduwelipotha	139	10	09	60-99
Total	864	80	49	60-99

Results and discussion

According to Table 1, the total population of the study area is 864, of which 80 are elderly people above 60 years. The age of the elderly people ranged from 60 to 99 years. The oldest living person was 99 years. All the elderly persons in the sample had good health and sharp memory. Table 2 shows the former occupation of the elderly people of NW Sinharaja peripheral area. According to Table 2 the elderly population had been engaged in chena cultivation, collecting forest material, cutting kitul flowers and hunting. 38.8% have been engaged in chena cultivation and 30.7% directly in collecting forest materials. All occupations show that they have been closely associated with the forest environment.

Table 3 shows different sources from where medicine had been obtained during an illness by the elderly people. As seen from the table, 49.9% of the medicine has been collected from the forest, 30.6 % from their garden and 16.3% from their own village indicating about 90.0% directly from their own surroundings. Venival, jatamansha, hatharavariya from the forest; pavatta, welpenela, rasakinda from their garden; vadhakaha and thora from the village were the common medicines mentioned by the elderly people. This indicates that the medicines used by them have been all natural products throughout their lives.

Table 2. Former occupation of elderly people of the NW
Sinharaja forest periphery (Source: Field Survey, 2011)

Name of the Village	Cutting kithul flowers	Chena cultivation	Collecting forest material	Hunting	Total
Kudawa	02	03	03	00	08
Pethiyakanda	03	04	03	00	10
Pitakele	01	03	02	01	07
Buthkanda	02	03	03	00	08
Miyanapalawa	02	03	02	00	07
Suduwelipotha	03	03	02	01	09
Total	13	19	15	02	49
%	26.5	38.8	30.6	4.1	100

Table 3. Sources of medicine consumed during an illness (Source: Field Survey, 2011)

Name of the Village	Forest	Home garden	Village	Nearest market	Total
Kudawa	03	04	01	00	08
Pethiyakanda	05	03	01	01	10
Pitakele	03	02	01	01	07
Buthkanada	03	03	02	00	08
Miyanapalawa	03	02	01	01	07
Suduwelipotha	04	01	02	02	09
Total	21	15	08	05	49
%	42.9	30.6	16.3	10.2	100.0

Table 4. Varieties of food consumed by the elderly people of the NW Sinharaja forest periphery (Source: Field Survey, 2011)

Fruits	Vegetables	Green Leaves	Yams
"Rambutan" *(Nephelium lappaceum)*	Winged beans *(Phaseolus lunatus L.)*	Golden leather fern *(Acrosticum aureum)*	Sweet potato *(Ipomoea batalas)*
Wild mango *(Mangifera ceylanica)*	Long beans *(Vigna unguiculata L.)*	Manioc leaf *(Manithot esculenta crantz)*	Manioc *(Manithot esculenta crantz)*
Papaya *(Carica papya)*	Cucumber *(Cucumis sativas)*	Centella *(Centella asiatica L.)*	Taro *(Colocasia ebculenta L.)*
Pineapple *(Annas comosus L.)*	Okra *(Hibiscus ecculentus)*	"Paththara" *(Cyathea crinita)*	Giant Taro *(Alocasia indica)*
Sweet orange (Green)- *(Citrus spp.)*	Bittergourd *(Momordica charantica L.)*	Winged bean leaf *(Phaseolus lunatus L.)*	Purple yam *(Dioscoria alata)*
Wild berries *(Syzygium caryophyllatum)*	Bottle gourd *(Lagenaria siceraria)*	"Heenbovitia"*(Osbokia octandra)*	"Dandeena"
Cashew nut *(Anacardium occidentale L.)*	Tomatoes *(Lycopersicon esculentum)*	Water spinach *(Ipompea aquatic)*	Lasia *(Lasia spinosa L.)*
Avacado *(Persea Americana)*	"Batu" *(Solanum spp.)*	Crepe ginger *(Costus speciosus)*	Chinese potato *(Coleus rotundifolius)*
Custard apple *(Annona cherimolar miller)*	Ash plantain *(Musa spp.)*	Hummingbird tree leaves *(Sesbania grandiflora L.)*	Potato (tropics) *(Colocasia esculenta)*
Rose apple *(Syzygium malaccensis)*	Cooking melon *(C.melokekiri)*	Climbing day flower *(Commelina diffusa)*	Five leaf yam *(Daioscoria pentaphylla)*
Sugar cane *(Saccharum officinarum L.)*	Luffa *(Luffa acufangula)*	Black pigweed *(Trianthema decandra)*	Elephantear *(Xanthasoma sagittifollium)*
"Himbatu" *(Salacia)*	Pumpkin *(Cucurbita mixima)*	"Gonika kola"	"Kondol" *(Beminicasa hispida)*
"Naran" *(Citrus reticulate)*	Brinjals *(Solanum melongena)*	Sneezewort *(Dregea volubibilis)*	
Passion fruit *(Ardisia humilis)*	Spinach *(Basella alba L.)*	"Thora" *(Cassa fora L.)*	**Cereals**
"Mango *(Mangifera indica L.)*	"Mathdamina" *(Turnera diffusa)*	"Kekatiya" *(Aponogeton crispus)*	Caracan millet *(Eleusine coracana L.)*
Guava *(Psidium gnajava L.)*	Cucumber *(Cucumis sativus L.)*	Aparusa *(Aporosa lindleyana)*	"Meneri" *(Panicium smatrence)*
Banana *(Musa spp.)*	Jak *(Artocarpus heterophyllus)*	Sessile joy wood *(Alternanthera sessilia L.)*	Rice - "El hal"
Dragon eye *(Dimocarpus longanum)*	Bread fruit *(Artocarpus hetorophyllus)*	Passion fruit leaf *(Passiflora edulis)*	"Amu"
Citron *(Citrus medica)*	Olive *(Elacocarpus serrtus L.)*	"Koppan kola"	**Others**
"Keena" *(Calophyllum bracteatum)*	Mushroom "Heenveliahathu"	"Mussenda" *(Mussenda frondosa L.)*	"Hal" *(Vateria copallifera)*
Mangostene *(Garcinia mangotana)*	Mushroom "Athuruhathu"	Oval leaf pond weed *(Monochoria vaginalis)*	"Beralia"*(Shorea worthingtonii)*
"Ambarella" *(Spondius dulcis)*	Mushroom "Kirihathu"	"Thelatiya kola"	"Tholol"
Ramontchi *(Flacoutia indica)*	Mushroom "Uruhathu"	Lasia leaf *(Lasia spinosa L.)*	"Dothalubada" *(Loxococecus rupicola)*
"Kaudukekiri"*(Melothria hetrophylla)*	Mushroom "Piduruhathu"		"Katukithul" bada (Oncosperma fasciculatum)
"Katuboda" *(Cullenia ceylanica)*	Mushroom "Lena hathu",		Basket ferns *(Drynaria quercifolia)*
Jak Fruit *(Artocarpus heterophyylus)*	Mushroom "Kandanhathu"		Bee honey
			"Kithulbada" *(Caryota urenus)*
			'Hatavaria" *(Asparagus offidinalis)*

Table 5. Participation in religious activities.
(Source: Field Survey, 2011)

Village	Active participation	No participation	Total
Kudawa	06	02	08
Pethiyakanda	07	03	10
Pitakele	04	03	07
Buthkanada	06	02	08
Miyanapalawa	06	01	07
Suduwelipotha	07	02	09
Total	36	13	49
%	73.5	26.5	100

Table 6. No. of elderly people who had/had not leisure times to spent after work.
(Source: Field Survey, 2011)

Village	Had leisure time	Had no leisure time	Total
Kudawa	07	01	08
Pethiyakanda	08	02	10
Pitakele	05	02	07
Buthkanada	05	03	08
Miyanapalawa	06	01	07
Suduwelipotha	07	02	09
Total	38	11	49
%	77.5	22.5	100

Table 4 shows the type of food consumed by the elderly people in the NW peripheral slope of the Sinharaja forest. Composition of food in daily meal of elderly people comprises of a balanced diet which includes fruits, vegetables, green leaves, yams, cereals and others according to Table 4, which are free from modern day agro chemicals. It also shows their indigenous knowledge of the forest food consumed and the sharpness of their memory by remembering over 100 forest food items, most of which are gathered from the forest. They also consume meats and fish. Participation of elderly people in religious activities is shown in Table 5 and 73.5 % of them had actively participated in religious activities. The activities mentioned by them (details are not shown in the table) were observing "sil" (precepts) on Poya days, ""pinkams (meritorious acts), offering flowers, "Kattina pinkam", "dansalas" (offering free meals), "dhana" (Alms givings) and

listening to preaching of "bana" (sermons). The serenity of their minds achieved by participating actively in religious activities may have contributed to long life. Table 6 shows the leisure time spent by the elderly people after their work and according to the table, 77.5 % of the elderly people had indulged in various leisurely activities. The activities mentioned were weaving, spending time with family members, visiting friends and relations, going to the nearby boutique and reading Jathaka stories after work. Balancing their time with work and leisure indicates a healthy lifestyle that may have contributed towards high life expectancy.

Conclusion

Good quality natural food and medicine with indigenous knowledge on the food and medicinal value, occupations directly linked to the forest which entailed long walks and exposure to unpolluted fresh air. A study on 680 persons between 51-97 years on lifetime exposure to polluted (air) environments by traffic pollution by Grey (2011) showed lower cognitive scores with poor memory. Another study by Power (2011) showed that the effect on the cognitive functions of people were equivalent to ageing by two years and with the doubling of carbon level it was 1.3 times more likely to have lower cognitive scores. In contrast, an unpolluted virgin forest provides a natural conducive environment for high life expectancy. A simple life style without stress and tension, engaging in religious activities, and keeping adequate leisure time has contributed to a higher life expectancy in the elderly population. Their good general health with razor sharp memory at this old age (remembering over 100 food items gathered from the forest) provides adequate testimony. According to Abeykoon (2004) a greater proportion of the rural women never reported illnesses which compares well with the elderly people of the Sinharaja peripheral community.

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