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学位論文内容の要旨

博士の専攻分野の名称：博士（保健科学）　　氏名：　萩　野　　泉

学位論文題名

Ecology of Baka hunter-gatherers' children in southeast Cameroon.
－nutritional status, physical activities , and daily behaviors－
（カメルーン南東部に居住するピグミー系狩猟採集民の子どもにおける生態学的研究
－栄養状態・身体活動・生活行動－）

Abstract

[Background]

Hunter-gatherer societies are characterized by subsistence based on gaining wild food resources and no domestication of plants or animals, and also described as “immediate-return” culture. They traditionally lived in a high mobility lifestyle, and their subsistence conditions are easily affected from ecological, social, and political factors. Partially unstable hunter-gatherer subsistence world makes requirement of returning on the individual investment rapidly, and storing future consumption lesser; hence continuous and certain amount of daily food acquisition are needed. Children in terms of their physical and psychological development, have higher risks from, and vulnerability to, environmental or social hazards than do adults. Contribution to subsistence by hunter-gatherers’ children were seldom described since they were rarely regarded as prospective foragers until fully matured. However, because nearest a half of hunter-gatherer population were consisted by children, it is hard to maintain their subsistence economy by depend on only adults; thereby the self-support among children are considered to be necessary and should be existed.

The current study explored the ecological system among hunter-gatherers’ children who are living in central African rainforest area from the aspects of nutritional status, physical activities, and daily behaviors.

[Field research]

During FY 2010 to FY 2014, fieldwork including demographic surveys, anthropometric measurements, GPS tracking, acceleration monitoring, and daily behavior observations were performed on Baka hunter-gatherer’s children in southeast Cameroon. The Baka are one of the groups of pygmy hunter-gatherers, and relatively semi-sedentarized. The surveys were conducted in both sedentarized village camps along trunk load and foraging camps in rainforest.

[Results and Discussion]

Demographic characteristics obtained from longitudinal census surveys and retrospective family tree interviews showed the comparable level of fertility and trend of natural population increasing among Baka population. The mean value of completed parity (5.03 ± 3.05) obtained from 295 ancient Baka females appeared in reconstructed family tree was moderate among the modern hunter-gatherer societies. Daughter-mother ratios as an indicator of population increasing rates were approximately 2.5–3.0, which also indicated the high potential of natural population growth.

The height and weight growth curves of Baka children obtained from cross-sectional measurements were generally below 3rd percentiles of U.S. reference. The mean values of Z-scores of height and weight for their ages (HAZ and WAZ) were also lower (below –3.0 and –2.0, respectively); over 90% of Baka children were suspected in chronic malnutrition. However, two z-scores (WHZ and AMAHZ) which standardized the body weight and arm muscle area by their height indicated that Baka children's body weight and arm muscle amount were comparable to those of U.S. children in same height. In addition, 15-years of longitudinal survey at one village found the child growth tempo was unchanged and similar to developed countries' children. From these results, the nutritional status of current Baka hunter-gatherer was considered to be well-nourished.

From accelerator/pedometer monitoring in sedentarized village camps, extremely high level of daily physical activities among Baka children were revealed. The mean values of Physical activity level (PAL) exceeded 2.0, and daily step counts were approximately 25,000–30,000 per day. As their age increased, Baka children tended to go out from their villages or camps, and expand their activity areas steadily. Older children (10–18 years old) often visited to other villages and stayed in a forest 2–3 hours for everyday; however, even in their early childhood (3–6 years old), they stayed meanly an hour in forest. Step counts were strongly associated to daily travel distance, activity radius, and PAL; hence, it was considered that physical activities of Baka children were fundamentally generated from walking.

From direct observations of daily time allocation in the foraging forest camps, it was revealed that Baka children tended to spend considerable length of daily time to food procurement activities even in the childhood. Daily total time of hunting, fishing, and gathering by children (142–227 min/day) were considered to be comparable to Baka adults usually spent. As their age increased, time allocated for "playing" got decreased (meanly from 30 to 3 min/day), and children become concern food procurement activities autonomously and avidly. Although the numbers of population and total consumption-days were greater in children than adults (410 person-days and 156 person-days), total amounts and variation of forest products brought back to camp were so much greater in adults. However, Baka children tended to avoid wholly rely on adults to gain daily foods. They are eager to acquire forest food products and tried to meet their energy requirement by themselves.

[Conclusion]

Baka children were considered to be generally healthy and well-being. In their small ecological world, the relationship among nutritional status, physical activity and daily behavior, and nutritional intake was considered to be circulated steadily and stimulatingly.