Borneo Biomedical Bibliography
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This bibliography was originally published by A. Baer and G. N. Appell in the Borneo Research Bulletin 27:77-89, 1996. It had 173 references. Now updated for the Institute of East Asian Studies, UNIMAS, Sarawak, the bibliography contains over 330 references.

The bibliography was originally assembled with two goals in mind. One was to delineate what is and is not known about human biology, particularly health, in Borneo. The other was to encourage the compilation by research workers of base-line data on neglected biomedical topics. Sustained biomedical research can contribute both to an illumination of practical problems and to an historical/evolutionary perspective on health and culture.

The reports referenced here all deal with Borneo. Recent papers published in peer-reviewed journals and edited books accessible through computer databases or libraries were favored for inclusion. Dutch language materials were omitted, but many are cited in Rousseau (1988). An earlier medical-anthropology review provides background information, specifically on groups in the Malaysian state of Sabah (Appell, 1968). Rousseau's (1988) bibliography on Central Borneo contains pertinent references on health, demography, botany, and other topics. Another bibliography (Cotter, 1965) contains little biomedical information.

The selected reports provide an overview of the health status of ethnic Bornean groups, based largely on studies in East Malaysia. Yet a coherent picture is elusive, since the studies were done at different times and places with disparate aims. No single report provides a thorough health survey of any particular group, one in which all ages were surveyed, demographic features of the group were ascertained, and past and present medical conditions were noted. Moreover, even for so dire a disease as malaria, little longitudinal information is available, despite the fact that 70% of reported malarial cases in Malaysia in 1990 were from Sabah (Lim, 1992). Rather, an early malarial survey of Sawarak and Brunei (De Zulueta, 1956) provides reliable information only on age 2-9 yrs. at single time points in various areas, despite known seasonal and annual variation in malarial parasitemia. Recent malarial reports have not built systematically on this 1956 survey base.

The cited reports do highlight some long-standing health problems in Borneo. These include both childhood and adult malnutrition, filariasis, intestinal parasites, malaria, and some microbial infections. For example, Schwenk (1975) reports that the Iban once had "one of the highest" incidences in the world of tetanus neonatorum, or newborn lockjaw; this resulted from cutting the umbilical cord with an unsterilized bamboo splinter and controlling bleeding of the cord with kitchen-fire ashes. The effect of these practices on infant morbidity and mortality has not been assessed.

Conditions on which little has been published include complications associated with pregnancy or childbirth (that is, female reproductive health), geriatrics, childhood communicable diseases,
dental problems, venereal diseases, and genetic disorders, to name a few. With notable exceptions, health-oriented demography has also been neglected, especially the many parameters of fertility and viability. Thus it is unclear which medical conditions are major causes of age-specific morbidity and mortality among Bornean ethnic groups now, or which were the major causes in the past.

The bibliography is divided into thirteen sections, the first covering general and miscellaneous topics. Later sections cover cancer, demography, dengue, filariasis, genetics, goiter, leprosy, malaria, mental health, nutrition, tuberculosis, and typhus. These section headings are meant to provide entryways for both biologists and anthropologists to the Bornean biomedical literature. For many of the references cited, the name(s) of the ethnic group(s) studied and the location of the study site are noted.

Bornean ethnic groups have received vastly different amounts of attention in biological or biomedical journals. The only biomedical reports on the Kenyah are on nutrition and malaria, while at least eight biomedical topics have been studied on the Iban.

I. General and Miscellaneous Topics


7. Appell, G. N. A survey of the social and medical anthropology of Sabah: retrospect and
prospect. *Behavior Science Notes* 3:1-54, 1968. (Concerns all Sabah groups)


29. Chin, S-C. Agriculture and resource utilization in a lowland rain forest Kenyah community. *Sarawak Museum Journal Special Monograph #4 (vol. 34),* 1985. (Gives population data for Long Selatong)


32. Copeland, A. The Muruts of North Borneo: malaria and racial extinction. *Lancet* 228:1233-1239, 1935. (This report is also on Dusun; it is analyzed in ref. 4.)


43. Griffith, G. Health and disease in young Sea Dayak men. *Sarawak Museum J*. 6 (5):322-327, 1955. [Iban volunteers for the Sarawak Rangers, while preselected in some ways for good health, had a number of problems: 9% had defective eyesight, 7% had otitis media, 7% had microfilariae, 5% had crab yaws, 4% had thyroid enlargement (goiter), 4% had heart murmurs, and 3% had "chronic" malaria. No cases of leprosy, scoliosis, inguinal hernia, or vitamin deficiency were observed.]


45. Hanihara, T. Dental and cranial affinities among populations of East Asia and the Pacific. *Amer. J. Phy. Anthropol*. 88:163-182, 1992. (This is an example of typological thinking about Asian groups, as if each were a clone. Dayaks, sampled at Pontianak, are opined to be a "remnant of 'pure' Proto-Malays," on p. 117; but Proto-Malays, pure or impure, are only a remnant mental construct of stereotypic thinking.)


53. Institute for Medical Research, Kuala Lumpur. Tropical Disease Research in Sabah. IMR Bull., no. 20, 1983. [Describes 1981 field studies on Rungus, Bajau, and other groups on the Bengkoka Peninsula, in the villages of Rosob, Rokom, Kebatagan, Sinukab, Kanibongan, and Pantai. Over 22% of the study population harbored microfilariae. Despite anti-malarial measures, malaria was mesoendemic, with a relatively high rate in males and in children. Over 20% of children were malnourished. Iron-deficiency anemia was found in 48% of the children and 28% of the women (15-45 yrs.). Leprosy was a public health problem, with a prevalence of perhaps 2.5/1000.]


55. Kamath, S. Hepatitis B surface antigen subtypes in Malaysia. Amer. J. Epidemiology 102 (2):191-195, 1975. (Shows "Dayaks" in Sarawak are like "Senoi" in W. Malaysia in having a certain subtype of hepatitis antigen and are unlike other Malaysian groups.)


58. Knapen, H. Epidemics, droughts, and other uncertainties in Southeast Borneo during the


86. Sather, C. *The Bajau Laut: Adaptation, History and Fate in a Maritime Fishing Society in Southeast Sabah.* Oxford University Press, Kuala Lumpur, 1996. (Ch. 2 is on health and demography.)


93. Tregonning, K. G. *A History of Modern Sabah (North Borneo 1881-1963).* University of Malaya Press, Singapore, 1965. (P. 163 reports 80% of Muruts examined in the 1930's had gonorrhea.)


seropositive, indicating past exposure.)


103. Yadav, M., S. Umamaheswari, and D. Ablashi. Antibody reactivity with two strains of human herpesvirus-6 in Malaysians. *J. Med. Virology* 33:236-239, 1991. (Samples of Iban, Kadazan, and Bidayuh populations all had low HHV-6 antibodies, but they had high Epstein-Barr virus titers.)


II. Cancer


(see also I: Yadav et al., 1991)

III. Demography


118. Appell, G. N. Social anthropological census for cognatic societies and its application among


138. Koblenzer, P. and N. Carrier. The fertility, mortality, and nuptiality of the Rungus Dusun. *Population Studies* 13:266-277, 1960. (A mixture of Dusun speakers in the Kudat area of Sabah, in a nontraditional setting, was studied; infant and childhood mortality appear to have exceeded 30%.)

139. Lam, C. K. *The population of Sarawak.* (2 vols.) Australian National University Ph. D. dissertation, 1983. (Reported to be available on microfilm in Australia)


153. Saw, S-H. *The Demography of Malaysia, Singapore and Brunei; A Bibliography.* Center of Asian Studies, University of Hong Kong, 1970.


IV. Dengue


(see also IX:Chang et al., 1997)

V. Filariasis


**VI. Genetics**


(On Kadazans)


(see also I:Baer, 1995; IX:Baer, 1998; IX:Khoo, 1981)

VII. Goiter


209. Chen, P. C., and P. Lim. The prevalence of endemic goiter in the Tinjar area, Sarawak. *Med. J. Malaysia* 37 (3):265-269, 1982. (On Iban, Kenyah/Kayan: in all groups more than 60% of both sexes, over 5 yrs. of age, were goiterous.)


212. Chen, P. C. *Penans.* Pelanduk Publications, Petaling Jaya, Malaysia, 1990. (Nomadic Penans obtained iodine-rich salt extracted by Kelabits from hot springs, but recent settlement led to a switch to iodine-deficient, imported rock salt; in one up-river Penan settlement, 92% of all adults were goiterous.)


223. Sellato, B. Salt in Borneo. In *Le Sel de la vie in Asie du Sud-Est.* Prince of Songkla University, Bangkok, 1993. Pp. 263-284. (States that Penan and Bukat have no more goiter than coastal people do.)


**VIII. Leprosy**


**IX. Malaria**


243. Fasihuddin B. Ahmad. Medicinal plants used by the Kadazan community in Sarawak. *Sarawak Museum J.* 44:45-57, 1993. (Some plants may have anti-malarial effects.)

244. Foong Kin. *Human behavioral factors in malaria transmission and control among the Muruts of Sabah.* University of Malaya, Department of Social Medicine, Ph. D. dissertation, Kuala Lumpur, 1991.


264. Strahan, J. Malaria in Sarawak. *Med. J. Malaya* 2 (2):83-92, 1947. (Found relatively low parasitemia in a small sample of Kedayan; inland Dayak areas had higher rates, although few data are provided.)


X. Mental Health


276. Schmidt, K. E. The racial distribution of mental hospital admissions in Sarawak. Review and Newsl. of Transcultural Psychiatric Res., No. 11:17-18, (1959 or 60). (This is the Annual Report, Sarawak Mental Hospital, 1959.)


(see also I:Winzeler, 1995)

**XI. Nutrition**


293. Arokiasamy, J. T. Nutritional problems of Malaysian children and approaches taken to


296. Chen, P. C. Ecological factors influencing the growth of the child. Med. J. Malaysia 34:6-12, 1979. (Reports 30% of Muruts ate goitrogenic cassava tubers or leaves at least once a week.)

297. Chen, P. C. Ecological basis of malnutrition among the Muruts of Sabah. Med. J. Malaysia 38 (1):9-14, 1983. (Resettled Muruts at Ulu Ansip in Keningau District are swiddeners; malaria is endemic; diet is varied but food shortages occur for part of the year.)


299. Chen, P. C., et al. A nutritional study of the Interior, West Coast, and Kudat Divisions of Sabah. Universiti Malaya, Kuala Lumpur, 1981. (On several ethnic groups; for N=3672 children, only 41% were nutritionally normal; Muruts were the most malnourished group.)


327. Tee, E. S., et al.  School-administered weekly iron-folate supplements improve hemoglobin and ferritin concentrations in Malaysian adolescent girls.  *Amer. J. Clin. Nutrition* 69:1249-1256, 1999.  [19% of Asajaya, Semera, and Muara Tuang secondary school girls in the Samarahan district of Sarawak were anemic (<12 g hemoglobin/dl); weekly iron-folate supplementation for 22 weeks lessened this anemic impact substantially.]


**XII. Tuberculosis**


337. Warren, G. A report on the incidence of positive tuberculosis skin test reactions and the incidence of active tuberculosis among school children in the Methodist schools, Kapit District, Sarawak. *Med. J. Malaysia* 20 (2):123-125, 1965. [73 of 403 Dayak students (18%) had positive skin reactions; Chinese and Malay children had higher positive rates; 2 of the Dayaks had active, pulmonary TB; Kapit-living Dayaks, ages 5-21 yrs., had a higher positive rate (29%) than did up-river Dayaks, ages 5-16 yrs. (9%).]

(see also I:Koblenzer, 1958; VIII: Chen, 1988a)

**XIII. Typhus**