

DISTRIBUTION AND PREVALENCE OF MALAYAN FILARIASIS IN SOUTH SULAWESI, INDONESIA

by

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ABSTRACT

Untuk mendapatkan gambaran distribusi dan prevalensi penyakit filariasis di daerah transmigrasi Sulawesi Selatan, telah dikumpulkan data survey yang diadakan oleh Dinas Kesehatan Propinsi dan Kabupaten pada tahun 1972, 1973, 1976 dan 1979.

Data diperoleh dari 82 desa dari 3 kecamatan, Mangkutana, Nuha, dan Wotu. Infeksi filariasis pada penduduk asli di Mangkutana (9.7%) lebih tinggi dari pada para transmigran (7.6%). Sedangkan pada penduduk asli di Nuha 3.6%, dan di Wotu 3.5%.

Filariasis is still one of the diseases of economic importance and continues to be a major health problem in Indonesia. Malayan filariasis (*Brugia malayi*) is endemic in many parts of the country (Lie & Ress, 1958, Lie, 1970). The disease occurs mainly in the rural areas. The prevalence of malayan filariasis in Sulawesi has been reported by Arbain Yoesoef & Cross (1978 a,b), and they determined it as the nocturnally periodic *B. malayi*.

Additional information of the prevalence of *B. malayi* from indigenous and transmigration villages in the Sub-district of Mangkutana, and in indigeneous villages at Sub-districts of Nuha and Wotu of South Sulawesi were obtained. The results of these surveys were compiled and presented in this paper.

MATERIAL AND METHODS

All the blood surveys were carried out by the Division of the CDC at the Provincial and Regency level in 1972, 1973, 1976 and 1978

respectively. From each person, a finger prick sample of 20 mm³ of peripheral blood was obtained using a glass capillary tube, between 19.30 to 24.00 hours. Thick smears made on microscopic slides were haemoglobinized the next morning and stained with Giemsa. Smears were examined under compound microscopes, the microfilariae were determined and recorded.

For statistical analysis, Chi-square tests were applied.

RESULTS

MANGKUTANA SUB-DISTRICT.

The results of the filariasis surveys at Mangkutana are divided into two sections. Table 1 shows microfilariae infection in 24 transmigration villages, and Table 2 deals with microfilariae infection in 21 indigenous villages in the same sub-district.

A total of 88.2% from a population of 9624 was sampled (Table 1). Of 8484 blood smears examined from 24 transmigration villages, 7.6% were found positive with microfilariae (Mf) infections. Mf were found negative in 8 of 24 villages surveyed. Among the positive villages, 9 villages were found with 5% Mf rate and above. The highest rate (31.1%) was in Mabungka I. The Mf rates in the remaining positive villages ranged from 1.5% to 4.6%. The combined Mf infection for males was 8.9% which was significantly greater than

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Tabel 1. Results of Filariasis survey of transmigration areas in Kecamatan Mangkutana, South Sulawesi.

Year	Villages	popn	% popn sampled	% of sex ratio in sampled		% mf infection		% total mf infection	% Elephantiasis in sample
				M	F	M	F		
1972	Mulyasari Baru	375	96.5	55.8	44.2	5.4	1.3	3.6	0
	Muktisari	349	96.7	54.3	46.7	20.2	16.0	18.3	4.2
		724	96.1	55.1	45.4	12.8	8.1	10.9	4.2
1973	Wonorejo I	718	95.5	50.1	49.9	11.9	12.0	11.9	0.9
	Wonorejo II	599	90.0	50.6	49.4	5.1	0.4	2.9	1.5
	Margalimbo	308	91.2	54.0	46.0	1.3	2.3	1.8	2.1
	Tegalrejo	254	90.9	52.4	47.6	10.7	10.0	10.4	0.8
	Sidobinangun	439	94.5	53.5	46.5	0.9	0.5	0.7	0.5
	Mulyasri	2174	96.0	52.8	47.2	15.0	7.4	11.4	0.9
	Teromu	782	97.6	51.0	49.0	16.7	14.4	15.6	2.2
	5274	93.7	52.1	47.9	8.8	4.4	7.8	1.3	
1976	Sukamaju I	386	74.9	53.6	46.4	0	0	0	0
1978	Kalaena Kalaena	205	80.5	50.9	49.1	0	0	0	0
	Lopi II	132	72.7	51.0	49.0	0	0	0	0
	Lopi IV	278	71.2	46.0	54.0	2.2	0.9	1.5	0
	Margosuko	105	69.5	43.8	56.2	15.6	14.6	15.1	1.4
	Mabungka I	103	80.6	49.4	50.6	36.6	26.2	31.1	2.4
	Mabungka II	165	80.1	49.3	50.7	0	0	0	0
	Sitomulyo	274	77.0	49.3	50.7	2.9	0.9	1.8	0
	Lokasi I	298	70.8	57.3	43.7	0	0	0	0
	Lokasi II	287	76.7	49.5	50.5	0	0	0	0
	Kalaena kiri Subvillage I	278	77.3	57.7	42.3	0	0	0	0
	Purosari Subvillage I	160	81.3	46.7	53.1	4.9	4.3	4.6	0.8
	Purwosari Subvillage II	185	81.1	52.0	48.0	11.5	8.3	10.0	1.3
	Kertaharjo I	387	78.0	49.0	51.0	4.7	5.8	5.3	0.7
	Kertaharjo II	383	78.6	51.5	48.5	0	0	0	0
	3235	76.8	50.3	49.8	5.6	4.3	4.9	0.5	
24 Villages		9624	88.2	51.9	48.1	5.9	6.1	7.6	0.9

that for females (6.1%) ($X^2 = 23.94$, $p < 0.05$). Elephantiasis cases were found in 13 villages and the rates ranged from 0.5% to 4.2% with a combined rate of 0.9% (76/8484).

In the indigenous villages, 90.1% from a population of 6648 were sampled (Table 2). Of 5990 individual blood smears examined from 21 villages, 9.7% was found positive

with Mf infections. Mf was found negative in one village only. Fourteen of 21 villages were found with Mf rates of 5% and above, and the highest (22.7%) was in Talikawat village. The Mf rates of the other infected villages ranged from 1.8% to 4.5%. There was no significant difference of Mf rates between males (10.0%, 306/3071) and females (9.5%,

277/2919) ($X^2 = 0.36$ $p > 0.05$).
Elephantiasis cases were observed in 18 of

21 villages, the rates ranged from 0.5% to 4.0% with a combined rate of 1.1% (65/5990).

Tabel 2. Results of Filariasis survey of indigenous villages in Kecamatan Mangkutana, South Sulawesi.

Year	Villages	popn	% popn sampled	% of sex ratio in Sample		% mf infection		% total mf infection	% Elephantiasis in sample
				M	F	M	F		
1972	Kerembua	368	92.1	48.7	51.3	4.8	5.7	5.3	0.3
	Rante Marie	301	94.7	56.8	43.2	9.8	10.6	10.2	1.0
	Tarengge Plantasien	148	81.1	57.5	42.5	15.9	9.8	13.3	0.8
	Kawarasan	752	95.3	50.1	49.9	5.6	3.4	4.5	0.8
	Temeni	250	96.4	49.4	50.6	10.9	13.9	12.5	0.8
	Rante Tiku	250	90.0	49.8	50.2	3.6	0	1.8	0
	Bayende Utama	165	68.5	59.3	40.7	7.5	4.3	6.2	1.8
	Bayende	339	91.7	52.1	47.9	11.7	12.8	12.2	1.0
	Talikawat	242	90.9	55.0	45.0	21.5	24.2	22.7	3.3
	Kayaa	342	88.0	50.8	49.2	17.8	20.3	19.6	3.0
		3257	88.9	52.9	47.1	10.9	10.5	10.8	1.2
1973	Kalaha	238	94.5	52.2	47.8	17.1	16.7	16.9	4.0
	Lopi	248	87.5	54.4	45.6	4.2	4.0	4.1	0.5
	Maleka	1751	97.4	50.8	49.2	11.5	11.4	11.5	0.4
	Korencia	174	85.1	55.4	44.6	7.3	9.1	8.1	1.4
	Laimbe	105	83.8	40.9	59.1	5.6	5.8	5.7	1.1
	Tawi Baru	176	90.9	44.4	55.6	5.6	2.2	3.8	2.5
			2692	88.2	49.7	50.3	8.6	8.2	8.4
1976	Rampoang	178	69.7	45.0	54.0	3.5	1.5	2.4	1.6
	Sawako	94	59.6	48.2	51.8	0	0	0	0
		272	64.7	46.6	52.9	1.75	0.8	1.2	0.8
1978	Mangkulande	158	89.9	52.8	47.2	18.7	14.9	16.9	2.1
	Ranteteko	238	74.8	52.2	47.8	4.3	7.1	5.6	1.1
	Koraendeme	131	74.8	53.1	46.9	3.8	2.2	3.0	0
		427	79.8	52.7	47.3	8.9	8.1	8.5	1.1
21 villages		6648	90.1	51.3	48.7	10.0	9.5	9.7	1.1

NUHA SUB-DISTRICT.

The sub-district of Nuha consists of 20 villages. About 92.9% of the population of 5894 people were sampled and the results are shown in Table 3. A total of 3.6% (197/5475) was positive with Mf infections. Eight villages were found with 5% of Mf rate and above, with the highest (11.4%) in Landangi village.

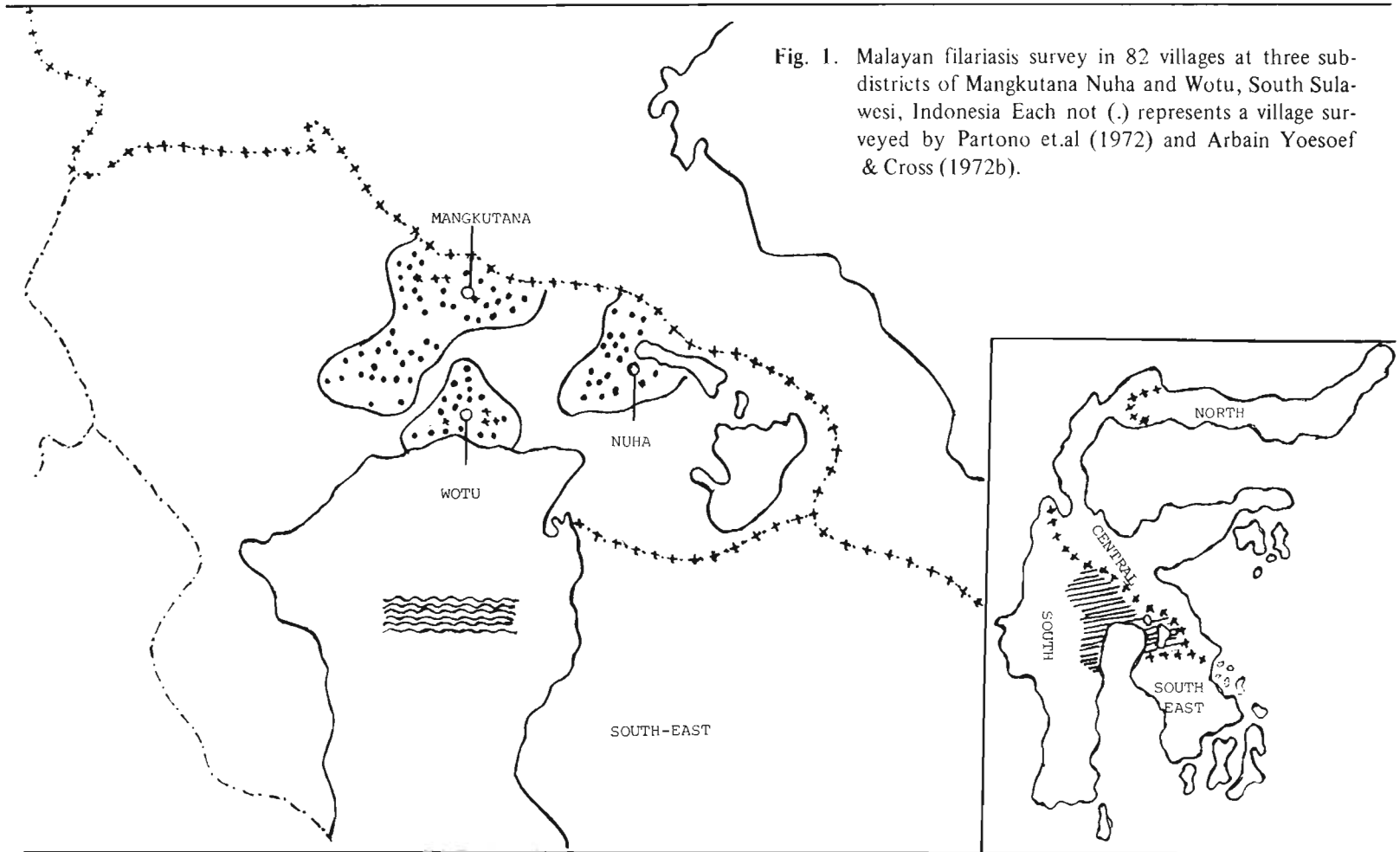
The infection of the remaining villages ranged from 1.1% to 4.3%. The Mf rate for males was 4.3% (123/2863) which was significantly higher than that for females (2.7%, 71/2612) ($X^2 = 10.33$, $p < 0.05$). Elephantiasis cases were found in 12 villages, the rates ranged from 0.3% to 2.2% with a combined rate of 1.0% (54/5475).

Table 3. Filariasis survey of indigenous villages in Kecamatan Nuha for 1973, South Sulawesi.

Villages and Subvillages	Popn	% Popn sampled	% of sex ratio in sample		% mf infection		% total mf infection	% Elephantiasis in sample
			M	F	M	F		
Bentilang	503	95.4	56.9	43.1	1.5	1.9	1.6	0.6
Waspenda	401	92.8	48.1	51.9	3.4	8.3	5.9	2.2
Beau	406	91.6	55.1	44.9	1.0	0	0.5	0.3
Tole-tole	278	91.0	48.2	51.8	6.6	3.1	4.7	0.4
Wassiku	203	93.1	54.5	45.5	5.8	1.2	3.7	1.1
Ballawai	705	96.0	51.6	48.4	2.3	1.5	1.9	0.7
Kamp. Baru	102	92.2	59.6	40.4	10.7	5.3	8.5	0
Matempi	103	90.3	49.5	50.5	10.9	4.3	7.5	0
Timampu	404	94.3	55.6	44.4	7.1	2.4	5.0	0
Korenalai	203	93.6	53.2	46.8	5.9	1.1	3.6	2.1
Kawata	356	88.8	51.9	48.1	5.5	2.0	3.8	1.6
Ladangi	151	92.7	44.3	55.7	12.9	10.3	11.4	1.4
Lambatu	415	93.7	54.8	45.2	3.8	2.8	3.3	0.3
Tabarane	101	94.1	45.3	54.7	11.6	3.8	7.3	0
Boneputih	60	80.0	50.0	50.0	8.3	0	4.2	0
Loka	146	97.9	51.0	49.0	5.4	4.3	4.9	0
Loka Zetake	137	86.9	62.2	37.8	12.2	0	7.6	0
Lareha	352	94.9	50.3	49.7	6.0	4.2	5.1	2.1
Wawondula	75	71.4	53.3	46.7	0	2.9	1.3	0
Matame	793	93.9	50.1	49.9	0.5	1.3	0.9	2.0
20 villages and Subvillages	5894	92.9	52.3	47.7	4.3	2.7	3.6	1.0

Table 4. Filariasis survey indigenous villages in Kecamatan Wotu for 1973, South Sulawesi.

Villages and Subvillages	Popn	% Popn sampled	% of sex ratio in sample		% mf infection		% total mf infection	% Elephantiasis in sample
			M	F	M	F		
Wotu I	1966	93.1	47.2	52.8	5.0	2.6	3.8	0.7
Wotu II	1692	95.9	50.4	49.6	1.7	1.0	1.4	0.2
Wotu III	1732	97.0	48.9	51.1	2.3	1.0	1.7	0.2
Lambarese Parno	545	97.6	51.9	48.1	8.0	6.3	7.1	0.2
Lauwo	500	97.2	50.6	49.4	0.8	0	0.4	0
Jompi	322	93.2	54.0	46.0	1.2	0.7	1.0	0
Ujung Tana	300	96.0	55.9	44.1	7.4	0.8	2.8	0
Kampung Bugis	250	95.2	47.5	52.5	5.3	1.6	3.4	0
Lambarese Bugis	900	96.4	49.8	50.2	6.7	4.8	3.8	0
Mabenta	304	98.7	53.3	46.7	0	0	0	0
Bulo Lalambu	495	96.7	51.3	48.7	2.0	4.7	3.3	0.2
Lepa-lepa	929	93.0	52.3	47.7	2.6	1.0	1.9	0
Bambaku	230	80.0	50.0	50.0	3.3	3.3	3.2	0.4
Potomua	150	96.7	46.9	53.1	10.3	2.6	6.2	0.7
Tarengga	550	93.8	51.7	48.3	7.9	4.8	6.3	1.2
Lambewe	493	91.9	53.6	46.4	13.6	21.9	17.4	0
Bureau	365	93.2	50.9	49.1	0	0	0	0
17 villages and Subvillages.	11,753	94.9	50.3	49.7	4.0	2.9	3.5	0.3



WOTU SUB-DISTRICT.

Wotu consists of 17 villages with a population of 11,753 people and 94.9% were sampled. The results are presented in Table 4. 3.5% (390/11,753) were found positive with Mf infections. Two of 17 villages examined were not infected.

Five villages were found with Mf rate of 5% and above, with the highest (17.4%) in Lambewe village, and infection in the remaining villages ranged from 0.4% to 3.8%. The Mf rate for males of 4.0% (224/5610) was significantly higher than that of 2.9% (161/5543) for females ($X^2 = 9.69$, $p < 0.05$). Elephantiasis cases were found in eight villages ranging from 0.2% to 1.2% with a combined rate of 0.3% (33/11,153).

DISCUSSION

The Mf rate in the indigenous villages at Mangkutana (9.7%) was found to be significantly higher than that in the transmigrasi villages (7.6%). In the same district ($X^2 = 20.1$, $p < 0.05$). Arbain Yoesoef & Cross (1978) found 12.1% Mf rate in 7129 people in the indigenous villages at Mangkutana, which was significantly higher than that of the present observation ($X^2 = 19.07$, $p < 0.05$). In 1970 Partono et al (1972) found 1 of 150 transmigrants in one of the villages (Sidobinangun) at Mangkutana was infected with filariasis. In the present observation in the same village the number of persons infected has increased to 3 of 415 examined.

There was no significant difference in the Mf rates between the indigenous villages of Nuha and Wotu districts, the rates being 3.6% and 3.5% ($X^2 = 1.06$, $p > 0.05$). The Mf rate in indigenous villagers at Mangkutana in 1973 (7.8%) was found to be significantly greater than that in Nuha ($X^2 = 56.18$, $p < 0.05$) and at Wotu ($X^2 = 113.84$, $p < 0.05$). Similarly, the Mf rate in the transmigration villages in Mangkutana in 1973 (7.8%) appeared also to be significantly greater than that in Nuha ($X^2 = 184$, $p < 0.05$) and Wotu ($X^2 = 137.65$, $p < 0.05$). The present observation of 16 villages with filariasis in the transmigration villages at Mangkutana district with higher Mf rates supports the findings of Lie and Winoto (1960) and Partono et al (1973) who found transmigrants were more susceptible to the infection than the indigenous people

in subdistrict Wonosobo, South Sumatera and Margolemo, South Sulawesi.

There were unfortunately no entomological data available from the three sub-districts to evaluate the vector-parasite relationships. Partono et al, (1972) examined 134 *Culex* mosquitoes (*Cx. bitaeniorhynchus*, *Cx. halifaxii*, *Cx. pseudovishnui*; *Cx. quinquefasciatus*, *Cx. gelidus*), 4 *Mansonia uniformis*, 2 *Anopheles vagus* and 111 *An. barbirostris* and found only *An. barbirostris* with 11.7% (13/111) harbouring all stages of filarial larvae with 3.5% infected larvae. They also fed 145 *An. barbirostris* to a carrier and obtained 43.3% infection rate. These results strongly suggest that *An. barbirostris* is one of the important vectors for malayan filariasis in Sulawesi. In the elucidation of the transmission dynamics of the disease, it is important that entomological studies are especially essential in these areas for control measures to be taken.

The present data of Malayan filariasis in these three sub-districts serve as additional locality records of the disease in South Sulawesi (Fig. 1) apart from those areas surveyed by the previous workers.

SUMMARY

Malayan filariasis surveillances were carried out in 82 villages in three sub-districts (Mangkutana, Nuha, Wotu) in South Sulawesi. Nuha and Wotu were surveyed in 1973, while in Mangkutana surveys were carried out in 1972, 1975, 1976 and 1978.

In Mangkutana the filariasis infection was significant higher amongst the indigenous population (9.7%) than that observed among transmigrants (7.6%). There was no significant difference of the Mf rate between males and females among the indigenous people but the Mf rate for males was significant higher than that for females among the transmigrants. The Mf rates among the indigenous villages at the sub-districts of Nuha (3.6%) and (3.5%) were not significant, Mf rates for the male population in these both districts were significantly higher than that for the females.

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