

Doctors in Training Grant

PRELIMINARY REPORT



With local nurses displaying their certificates after training

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**Master of Philosophy –
Focus on scabies research**

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Scabies is a parasitic disease caused by the parasite *Sarcoptes scabiei* var *hominis*. It is most commonly associated with a rash and intense itch which is usually worse at night. Complications of itching, including lack of sleep, subsequent poor concentration and irritability have been described in individuals with scabies.

However, the more serious complications are the result of bacterial co-infection secondary to open sores caused by scratching. Infection with *Streptococcus pyogenes* or *Staphylococcus aureus* can cause skin infection or deeper life-threatening infections. Immune mediated diseases can also result from *Streptococcus* infection, such as rheumatic fever and glomerulonephritis which can lead to chronic diseases with high associated fatalities.

The Global Burden of Disease Study estimates that scabies affects 140 million people at any one time. The data that is available suggests that prevalence in our region is very high, especially in remote Indigenous communities and in the pacific.

The available prevalence data also shows that children are disproportionately affected. Despite the high estimates, accurate burden data does not exist for many regions. In order to better describe the epidemiology of the disease, The International Alliance for the Control of Scabies have stressed the importance of collecting accurate data on the prevalence of scabies.

In keeping with the World Health Organization's concept of task shifting, it has been proposed that prevalence mapping of scabies could be performed by non-expert local examiners. Task shifting refers to the reallocation of specific jobs to less specialized health-care workers in order to increase efficiency and coverage of services in low resource settings.

I am undertaking a Master of Philosophy through the University of Melbourne's Department of Paediatrics, based at the Murdoch Children's Research Institute in the Tropical Diseases Group. My research has involved investigating the role of non-expert examiners in the diagnosis of scabies. We hope to contribute to the body of evidence that suggests non-experts could play an important role in the diagnosis of scabies in low resource settings and develop a training package to assist in this process. This would mean that epidemiological mapping, an assessment of the amount of scabies in a population, could be performed by local staff members. This would increase the feasibility of mapping in settings where access to specialists or specialist diagnostic tests is not available.

My projects were conducted in the Solomon Islands, a pacific nation located north of Australia. Most individuals in the Solomon Islands rely on subsistence agricultural systems with 80% of the population living in non-urban settings. The Western Province is the third largest province in the Solomon Islands, with a population of around 70,000 people. Although the Western Province has two hospitals there are only three doctors for the entire population. Therefore, most health care is provided in small clinics by nurses or nurse aides. The capital of the Western Province is the town of Gizo which has a population of approximately 3,500. This is where my studies were conducted.

Our team worked closely with the Western Province Ministry of Health. The local Ministry of Health staff selected four local nurses from the Western Province, who travelled to Gizo for training in scabies diagnosis. We undertook a brief training program at the Gizo Hospital and then undertook assessments at both the local Hospital and at Gizo Primary School. We were able to demonstrate that nurses can be trained in the diagnosis of scabies and impetigo and can contribute to diagnosis in scabies programs.

Additionally, during this time we conducted a prevalence survey at Gizo Primary School. We found that the prevalence of scabies was extremely high at 54%, as was impetigo at 32%. We were also able to provide further evidence of the association between the two diseases. This data helps to reinforce the importance of the development of control programs in settings such as the Solomon Islands.

I also had the opportunity to contribute to a large clinical study based in the Western Province of the Solomon Islands. This is a separate study which is focused on increasing the efficiency of mass drug administration protocols. The study is hoping to achieve this by determining the best dosing regimen of oral ivermectin.

In Australia uncomplicated scabies is generally treated with 5% permethrin cream, which is applied from the neck to the toes on clean skin, covering the entire body (including under finger nails) and left on overnight. All contacts of the individual with scabies must also be treated; and then treatment must be repeated in one week. In the Solomon Islands, and other similar settings, another cream is used which works in a similar way, with the active ingredient benzyl benzoate. The application of treatment cream is a difficult and time-consuming process. If not left on for long enough or not applied to all aspects of the skin, treatment will not be successful. If all contacts are not treated then the risk of re-infection is high. In remote communities with high scabies prevalence, households are often crowded and populations are frequently mobile, further reducing the likelihood of successful topical treatment.

Research has shown that mass drug administration with ivermectin, and anti-parasitic medication in the form of a tablet, is more effective in reducing the burden of disease in areas with high prevalence. This research will provide crucial information to the development of global scabies programs.

I am proud to have contributed to the growing evidence that scabies control is of great importance and to the development of novel ways of mapping scabies. I look forward to ongoing involvement in scabies research and working towards the global eradication of this disease.

To travel to and work in the Solomon Islands was an enormous privilege and the funds provided by MIGA supported my travel. I was constantly in awe of the extraordinary beauty of the country and the inspiring generosity and resilience of the local staff and communities.

I look forward to publishing my research and submitting my thesis in the coming months. I am very grateful for receiving the MIGA Doctors in Training Grant and for the incredible opportunities it helped to facilitate.



1. Addressing students at Gizo Primary School with the local study coordinator.
2. A public health message on a community store room in one of the villages.
3. Typical scabies lesions on the foot and ankle of a child.

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