

# Population, public health and tubal ligation in Vanuatu

**Abstract:** The association between population growth and public health is often neglected. Between 1989 and 1999 Vanuatu's population grew by 30%. Unless this growth slows existing public health problems will worsen. To gain insight into family planning habits 111 ni-Vanuatu women undergoing tubal ligation were surveyed. 85% had 4, or more, children. Women resident on the outer islands had more children than those on the island containing the nation's capital. The implication is that ni-Vanuatu women perceive 4 children as desirable. With approximately half the population entering their reproductive years in the next decade this is too many to avoid a population explosion in Vanuatu. Public health campaigns must promote the benefits of a small family. Urgent education and widespread provision of effective family planning is required to avoid a future public health crisis. Aid donors need to be made aware of this as an absolute priority.

Robert F Grace\*

## Introduction

Colonization by European powers resulted in enormous declines in the indigenous population of the Pacific island nations. This was primarily due to infectious disease, to which the local population was biologically naïve. Vanuatu, formerly the British/French condominium of the New Hebrides, is a small developing island nation in the Southwest Pacific. Accurate estimates of its pre-colonial population are hard to ascertain. One estimate is that the country comprised upwards of a million people. Whilst this is hard to conceive it is a figure that many ni-Vanuatu aspire. Traditionally large families conveyed prestige and status. In some respects this thinking has been transferred to a national level where there is the common misconception that increasing the country's population will result in economic improvement. The realities of the matter are however that in Vanuatu the GNP is approximately US\$1230 per annum.<sup>1</sup> Vanuatu already relies heavily on foreign aid and is unlikely to achieve self-sufficiency. The 1967, 1989 and 1999 population census results recorded the population to be 77,988, 142,419 and 186,678 respectively (Figure 1). The latter estimated an annual growth rate of 2.8%.<sup>2</sup> In addition 44% of the population are under 15 years of age. As this group reaches their reproductive years the forecast population growth is enormous. Vanuatu cannot 'afford' a population growth rate of this magnitude. If this population growth contin-

ues it will place intolerable strains on the development of the country, which cannot keep pace, and result in worsening health and development statistics. The country is already beset with high rates of tuberculosis, malaria, sexually transmitted disease, poor nutritional figures and increasing rates of non-communicable disease. Vanuatu does not yet have HIV, however 25.8% of women visiting the antenatal clinic in Vila have at least one STD; (in the teenage cohort the figure is 58%).<sup>3</sup> If other Melanesian nations are any indication HIV, when it does arrive, is likely to be epidemic. In addition there are burgeoning social problems related to island/urban migration.

Before further goals can be attained in areas such as public health, effective measures are needed to significantly improve family planning and slow population growth. Post-partum tubal ligation is one such measure. Tubal ligation is a single intervention that produces reliable, irreversible, contraception. DepoProvera and other contraceptives are approved for use but due to infrastructure and other problems the supply of even the simplest contraceptives cannot be guaranteed. On this background a survey was conducted of 111 ni-Vanuatu women undergoing tubal ligation at Vila Central Hospital.

## Methods

This study was conducted following local review committee approval. Between 7<sup>th</sup> July 1999 and the 30<sup>th</sup> April 2001 111 women presenting for tubal ligation at Vila Central Hospital were surveyed. They were asked their age, their island of birth, their island of residence, the number of pregnancies they had had and the number of live births. They were asked the age of their oldest child, (to ascertain their age-at-first-child). They were also asked the gender of their children. Finally they were asked at what level they finished their education. For comparison the number of vasectomies performed during the survey period was counted. Where appropriate results are expressed as the mean +/- standard deviation. Statistical

\*Vila Central Hospital, Port Vila, Vanuatu. Contact: Dr Robert F Grace, C/- Vila Central Hospital, PMB 013, Port Vila, Vanuatu. Tel: (678) 22053 Fax (678) 22053. E-mail: rgrace@vanuatu.gov.vu

analysis was performed using Graphpad InStat statistical software package.<sup>4</sup>

**Results**

85% of women presenting for tubal ligation had 4 or more children (Table 1). The mean gravida and parity were respectively 5.1 +/- 1.7 and 4.9 +/- 1.5 (range 2 - 12). The median parity was 5.

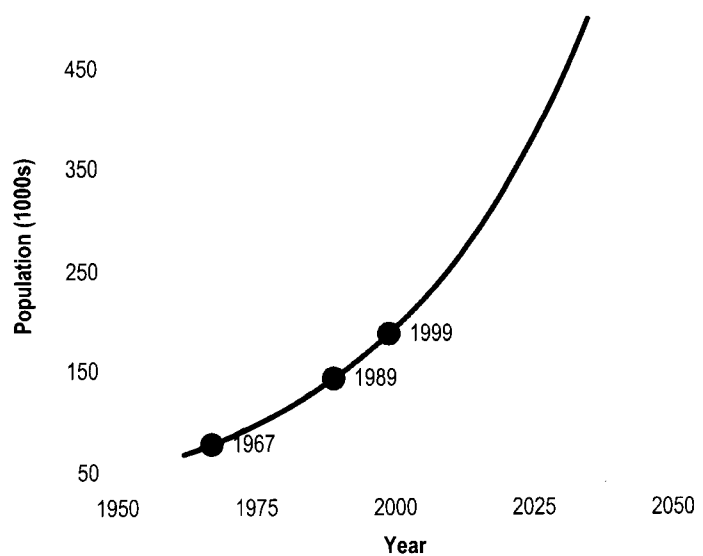
The mean age of women presenting for post-partum tubal ligation was 33.4 +/- 5.1 years. 45% of women had their first child when aged less than 20 years. On average they had their first child at 20.7 +/- 3.1 years, (median 20). Having their first child at a young age did not appear to predict a future large family. (Figure 2).

Subtracting mean age-at-first-child from mean age-at-tubal-ligation and dividing by mean parity gave a mean birth interval of 3.1 +/- 1.2 years.

54% of the infants born pre-tubal ligation were male. Overall the mean gender split for families was 2.4 +/- 1.3 male children and 2.5 +/- 1.6 female children.

There was a trend for women with higher levels of education to have fewer children although this did not reach statistical significance (Table 2). There was also a trend for women born on the outer islands to have more children than those born on Efate, the island containing the capital city Port Vila. This also did not reach statistical significance (Table 3). Similarly women resident on the outer islands were likely to have more children before tubal ligation than women resident on Efate (table 3). 51 of 83 women (61%) living on Efate had been born on other islands. 7 vasectomies were performed during the study period.

Fig. 1. The population of Vanuatu

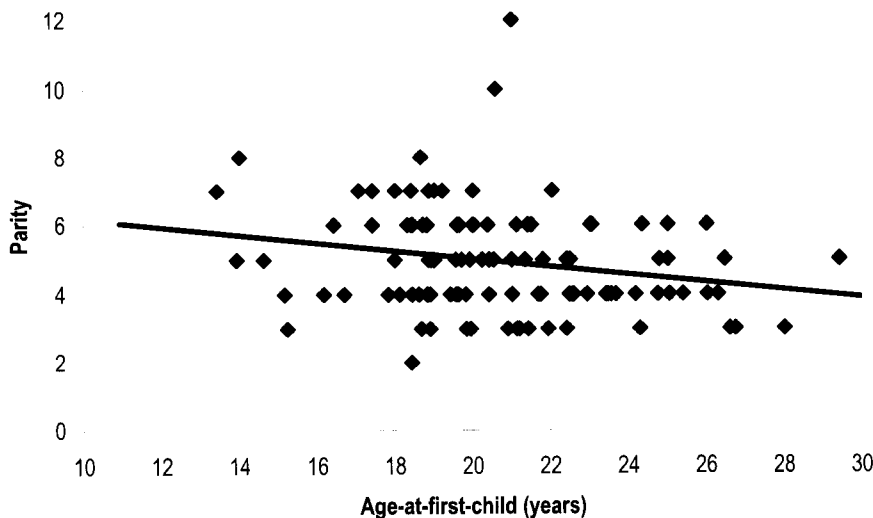


**Discussion**

Family planning and population growth are key public health issues in the Pacific. However compared to Africa, Asia and the Indian subcontinent there is comparatively little material published relating to fertility and contraception in the Pacific.<sup>5,6</sup> This is surprising as the problems of population growth are no less pressing, perhaps even more so. The findings in this study are in fact strikingly similar to some of the poorest developing nations in Africa.<sup>7</sup> The Pacific island nations are vulnerable to rural-urban drift, limited land area, minimal agriculture, limited fresh water supplies and depletion of fishing stock. Health problems relating to overcrowding, in particular tuberculosis are common.<sup>8</sup> Bringing the rate of population growth into line with infrastructure development is imperative; otherwise all measures of public health are likely to decline.

Worldwide literature suggests that fertility in developing countries has halved since the 1960s.<sup>9</sup> The results from this survey, and anecdotal information, suggest that the average family size in Vanuatu, whilst still about 5, has decreased. Brewis et al in Samoa, another Pacific island nation, found that during the last decade knowl-

Fig.2 Parity vs Age-at-first-child



edge about contraception amongst women had increased and this may be partially responsible for the decline.<sup>5</sup> Falls in infant mortality in Vanuatu from 45 to 25 per 1000 may also have contributed.<sup>2</sup>

The results revealed here suggest that in Vanuatu, as elsewhere in the world, improving the education of women is an important step to smaller family size. Currently only one third of ni-Vanuatu children proceed to secondary school and there is reportedly only a 30% literacy rate amongst adult women.<sup>10</sup> This study supports this finding with only 25% of women surveyed having proceeded to secondary school. Even fewer women proceed to any form of tertiary training with only 5% of women in this study having received any form of advanced education. This appears to be ahead of the nation's average. In Vanuatu schooling is not free and there is a tendency for girls to cease schooling earlier than boys.<sup>10</sup> A positive gender bias towards women in education may provide far-reaching effects.

The finding that women resident in Efate had fewer children may reflect the fact that these women are likely to have attained higher levels of education. Even so

**Table 1. Percentage of women per parity group**

Parity	Number (% Total)	Cumulative %
12	1 (0.9%)	0.9%
10	1 (0.9%)	1.8%
8	2 (1.8%)	3.6%
7	10 (9.0%)	12.6%
6	22 (19.8%)	32.4%
5	24 (21.6%)	54.1%
4	34 (30.6%)	84.7%
3	16 (14.4%)	99.0%
2	1 (0.9%)	100.0%

women born in the outer islands and subsequently living in Efate were likely to have less children so it may simply reflect better access to services.

61% of the women surveyed were born on outer islands but now lived in Efate. This reflects the very high level of island/urban migration. Children born on the outer islands in the forthcoming population boom will migrate

to the major urban centres. This phenomenon is already in evidence with some small islands recording a fall in population as young people move to urban areas.

Vanuatu's population has a male predominance.<sup>2</sup> Despite this the even distribution in infant gender suggest that the gender of the last born infant or the gender balance in the family has little influence on the decision to proceed with tubal ligation.

The mean birth interval of 3.1 years is slightly longer than other recent data from the developing world<sup>11</sup> It falls within a 'healthy' range. Women with short intervals between pregnancies have a greater risk of maternal death. These women are also at increased risk of anaemia. In Vanuatu 55% of women are reportedly anaemic so perhaps even greater birth spacing could be encouraged.<sup>12</sup>

**Table 2. Education vs Parity**

Education	Mean Parity+/-StDev	Median	Range
Village n= 11	5.5 +/- 1.4	6	3-7
Primary n= 72	4.9 +/- 1.7	5	2-12
Secondary n= 22	4.9 +/- 1.3	5	3-7
Tertiary n=6	4.3 +/- 0.5	4	4-5

**Table 3. Island of Birth vs Parity**

Island of Birth	Efate n=32	'Outer' Island n=79
Mean Parity+/-StDev	4.7 +/- 1.2	5.0 +/- 1.7
Median	4	5
Range	3 - 7	3 - 12

**Table 4. Island of Residence vs Parity**

Island of Residence	Efate n=83	'Outer Island' n=28
Mean Parity+/-StDev	4.8 +/- 1.2	5.2 +/- 3.0
Median	4	5
Range	3 - 8	3 - 12

Surprisingly having their first child at a younger age did not seem to predispose to ni-Vanuatu women having larger families. The findings here (see slope of line in Figure 2) suggest that delaying the age-at-first-child by a decade would only reduce family size by one. Regardless it would still seem likely that benefit might be achieved by encouraging women to have their first child later. Whilst family support for women with children is strong having their first child later may provide at least some women with greater opportunity to secure work and training and this may contribute to improvements in public health and the status of women.

In 1998 71% of women surveyed reported using no contraception.<sup>13</sup>

The reasons for this are likely to be multi-factorial. Drug and medical supplies to rural health centres are poorly coordinated and unreliable. At times even the most basic medicines, let alone contraceptives, are unavailable in the outer islands. Religious issues are also relevant in Vanuatu. The use of traditional contraceptive methods are common.<sup>14</sup> Permanent options such as tubal ligation may provide the solution for some women.

Postpartum tubal ligation is one of the most effective female sterilization techniques. In the first year after the procedure there are reportedly 0.05 pregnancies per 100 women (1 in every 2,000 women), within 10 years after the procedure, 0.75 pregnancies per 100 women (1 in every 133).<sup>15</sup> Vila Central Hospital is one of only two hospitals in the country reliably offering post-partum tubal ligation services. This survey suggests that women in the outer islands do not have equal access to the tubal ligation services. Innovative thinking must be applied to solve this problem and must come with the political backing to make it a reality.

The imbalance between female and male sterilization is noteworthy. Education and promotion of vasectomy amongst men needs to be encouraged. Clearly tubal ligation seems currently to be more culturally acceptable and this needs to be acknowledged in any future planning. The benefits of a smaller family must be promoted generally.

This study represents a select group of women presenting to Vila Central Hospital the nation's primary referral hospital. This being the case it is likely that these women as a group are more educated, wealthier and have fewer children than the population at large from which they are drawn. So it may be that the figures presented here are in fact better than the situation existing throughout the country. Conversely they are also women choosing to end their childbearing potential. Therefore it is arguable they may be women at the upper end of the fertility range. The corollary is that they are women with access to tubal ligation services and therefore there may be many more women would wish to end their childbearing capacity but do not have this option and as a result have larger families.

Vanuatu has a number of public health problems. The country has a population growth rate of approximately 2.8%pa. Contraceptive services are not reliably available throughout the archipelago and post-partum tubal ligation services are even less accessible. Along with improving the education of women and strengthening the political will to slow population growth innovative solutions must be sought to make contraception, tubal ligation and vasectomy services freely, widely and reliably available throughout the country. The solutions are not easy but without adequate measures to improve family planning and reduce family size the likelihood of achieving sub-

stantial, sustainable development in health and/or the standard of living in Vanuatu within the ensuing decades is remote.

## References

1. *Pacific Human Development Report 1999* - World Bank and Asian Development Bank Estimates
2. Government of Vanuatu, National Statistics Office. 1999 Census
3. Antenatal clinic STI survey Port Vila Vanuatu. 2000. Ministry of Health Vanuatu, WHO - Western Pacific Regional Office.
4. Graphpad InStat™ Copyright © 1990-1993. Graphpad Software V2.04a, 940627s
5. Brewis AA, McGarvey ST, Tu'u'au-Potoi N. Structure of family planning in Samoa. *Aust. N.Z. J. Public Health* 1998; 22: 424-7.
6. Levy SJ, Taylor R, Higgins IL, Grafton-Wasserman DA. Fertility and contraception in the Marshall Islands. *Stud. Fam. Plann.* 1988; 19: 179-85.
7. Lema A, Mtimavalye LA, Msiska FS. Socio-demographic characteristics of family planning clients and their possible influence on contraception in Malawi. *East Afr. Med. J.* 1998; 75: 41-6.
8. *Burden and impact of tuberculosis in W.H.O. Western Pacific Region (2000)*. WHO Office for the Western Pacific Region.
9. Bongaarts J. Trends in unwanted childbearing in the developing world. Proceedings 1997 Annual Meeting, Population Association of America, Washington, D.C. March 27-29.
10. *A Situation analysis of children and women in Vanuatu 1998*. The Government of Vanuatu with the assistance of United Nations Childrens Fund. UNICEF Pacific PMB Suva Fiji
11. Conde-Agudelo A, Belizian JM. Maternal Morbidity and mortality associated with interpregnancy interval: cross sectional study. *B.M.J.* 2000; 321: 1255-1259.
12. *Report of the second national nutrition survey. 1996*. Department of Health. Government of Vanuatu
13. UNFAP Government of Vanuatu National Health Survey 1998.
14. Bourdy G, Walter A. Maternity and medicinal plants in Vanuatu. I. The cycle of reproduction. *J. Ethnopharmacol.* 1992; 37: 179-96.
15. *The Essentials of Contraceptive Technology*. John Hopkins University, W.H.O., USAID. Population Information Program Center for Communication Programs, The John Hopkins School of Public Health USA 1997. P9-4. ■