Pacific Islands Families: The First Two Years of Life (PIF:FTY) Study

TECHNICAL REPORT 2

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1.0 BACKGROUND

This report will outline the methods and procedures used in the Pacific Islands Families (PIF): First Two Years of Life Study. The PIF was designed to advance scientific knowledge in a number of disciplines and provide public benefits through the provision of good information. This will inform the policy development and assist programme implementation for a variety of stakeholders working towards maximising the potential of Pacific families and communities within broader New Zealand society.

Following the Second World War links between Pacific Island groups and the countries around the Pacific rim intensified and mobility within the region increased substantially (Bedford, 1997). Migration, sometimes supported by intergovernmental agreements, was fuelled by the search for employment and a higher standard of living (McPherson, 1981), resulting in 400,000 people of Pacific Islands ethnicity living in the rim countries of the Pacific by the mid 1990's (Ward, 1996). Migration to New Zealand has been historically popular since the 1960's due to its proximity, but also the labor demands of high economic growth in the New Zealand economy (Meleisea & Schoeffel, 1998; Bedford & Didham, 2001). Despite this growth and employment involvement, Pacific peoples remain socio-economically disadvantaged in New Zealand society. The employment rate and labor force participation is lower than in the total population, as well as the annual median income. Pacific people are more likely to be living in poor circumstances with restricted access to higher education, home ownership, and access to functional amenities such as cars and telephones. They are also over-represented in multiple adverse health and social statistics (Bathgate et al., 1994; Statistics New Zealand, 2002).

Furthermore, the health of Pacific infants continues to be an issue of concern with the Pacific infant death rate being higher than the national infant death rate from 1997, with an infant death rate of 7.9 deaths per 1000 births. (Statistics, 2002) Pacific infants also have very high rates of hospitalisation, particularly for respiratory illnesses (Bathgate et al., Kerr, 1981). In addition Pacific children present at hospital with higher severity of illness than other New Zealand children (Pati et al., 1996).

As one of the fastest growing population subgroups in New Zealand, Pacific peoples (those residents with a Pacific Islands heritage) form an integral part of New Zealand society (Cook et al., 1999). The Pacific population in New Zealand has now reached over 232.000 people, making up 6.5% of the New Zealand population (Statistics New Zealand, 2003). Auckland has the highest population of Pacific people. Samoan people make up the largest group (49.6%), followed by Cook Island Maori (22.7%), Tongan (17.6%), Niuean (8.7%), Fijian (3.0%), Tokelauan (2.7%) and Tuvalu

Islanders (0.8%). This ethnic diversity is manifest in differing cultures, languages, strength of acculturation and corresponding access to (and utilisation of) health and social services.

1.1 Overview of the PIF study

The cohort was recruited from Middlemore Hospital, the largest Hospital under the umbrella of South Auckland Health in 2000. The maternity division of Middlemore has the largest number of Pacific births in New Zealand, and includes the main Pacific Islands ethnic groups. There are two small satellite maternity hospitals (Papakura and Botany Downs), connected to Middlemore Hospital. Mothers and infants who were transferred from Middlemore to these satellite hospitals after the birth were eligible for inclusion in the study. A single large recruitment site was chosen as it has immediate theoretical and social benefits in terms of the epidemiological foundation (utility of findings for the respondents and a substantial identifiable source community), will enhance compliance and retention, and is logistically sound in terms of data gathering and information systems management.

Information concerning the current and recent circumstances of the families was obtained through interviews conducted at three time points. i.e., shortly after birth (~ six weeks) and at 12 and 24 months. One strength of the project is the inclusion of *mothers and fathers* (at 12 and 24 months), paternal reports of child functioning being largely absent from the South Island longitudinal studies. Secondary information was obtained where appropriate from Plunket, extracting information from records at age six weeks and six months. Selected hospital-based data were also obtained on receipt of full informed consent. Where appropriate, standardised instruments with demonstrated reliability and validity were used.

2.0 AIMS

The *Pacific Islands Families Study* (*PIF: FTY) is* designed to follow a cohort of 1398 Pacific children and their families and to assess the children's development and wellbeing. The *PIF: FTY* identified a cohort of infants born at Middlemore Hospital in South Auckland over calendar year 2000. The *PIF: FTY*, funded in the main by Foundation for Research, Science and Technology, is focused on the key developmental stage of early infancy and the influence of the socio-cultural context and family environment on Pacific children at ages six-weeks, 12 and 24 months. The aims are to:

- identify and characterise those individuals and families experiencing both positive and negative outcomes;
- understand the mechanisms and processes shaping the pathways to those outcomes; and

- make empirically based strategic and tactical recommendations to improve the wellbeing of Pacific children and families and thereby benefit New Zealand society as a whole.

The study will provide ethnic-specific information to a variety of end-users on which to base interventions and inform policy development to help address many negative health and social statistics that face Pacific children and families.

3.0 METHODS

3.1 Design

The PIF Study employs epidemiological methods and a prospective design to follow a birth cohort selected from the Pacific population over the first two years of the child's life. The PIF Study is made up of respondents from a community population, and follows individuals and families *prospectively.* This design was optimal in that it satisfied the aims of the study by (a) allowing estimation of incidence rates; (b) providing relative and attributable risk statistics and causal pathways; and (c) largely eliminating recall bias and permitting analysis of bias through attrition and non-participation (Lilienfeld & Lilienfeld, 1980). Alternate possibilities regarding the start point for data collection (e.g., at an antenatal point), their advantages, disadvantages, costs and feasibility have been worked through extensively by the scientific and community members. The present design is cost-effective (Fergusson et al., 1989), and is at a developmental stage that is optimal for intervention (Mrazek & Haggerty, 1994).

3.2 Statistical power

A cohort of approximately 1400 was recruited as it was estimated that with attrition, a final cohort at 24-months of 1000 would provide sufficient statistical power to detect moderate to large differences after stratification for Pacific ethnicity and other key variables (e.g., sole vs. two-parent families). Based on the non-differential attrition rate of 6% to date the projected cohort numbers at each of the follow-up data points will still have adequate power with 1224 primary respondents (mothers) at 12-months and 1144 at 24 months. The size of the cohort has adequate power for inter-ethnic comparisons. Intra-ethnic analyses will only be calculated for major groups such as Samoan, Tongan and Cook Islands Maori. It is recognised that power may not always be adequate for analyses involving smaller ethnic groups or for more complex analyses involving a greater number of categories (e.g. different feeding methods in Islands born versus NZ-born Tongans). Variables other than ethnicity may be collapsed if cross-tabulations are sparse.

3.3 The cohort

The cohort was drawn from Middlemore Hospital in South Auckland from 15 March to 17 December 2000.

3.3.1 Eligibility criteria

All potential child participants were selected from live births at Middlemore Hospital where the child had at least one parent who identified as being of a Pacific Island ethnicity and also a New Zealand permanent resident. There were no further eligibility requirements for participation in the Study. While in Middlemore Hospital, permission was sought from the mothers of potential participants to contact them six weeks later. At this initial approach 98% of mothers consented to a visit by an interviewer to further explain the study when their infant was six-weeks old.

3.3.2 Recruitment and the provision of information and informed consent at the six week measurement point

1. Promotional material was made available through numerous sources (e.g. media, community meetings) so that parents were aware of the study and had time to consider their involvement prior to admission at Middlemore. Information distributed via antenatal classes and Lead Maternity Carers also informed all potential participants.

2. Recruitment procedures occurred at Middlemore through the Birthing Unit in conjunction with the Pacific Islands Cultural Resource Unit that provided a daily printout of Pacific admissions. These were checked for Pacific births and crosschecked with the daily records held in the Birthing Unit.

3. Under the supervision of Middlemore Clinical staff, a Pacific Liaison Officer (PLO) appointed by the Study made the initial approach to eligible participants within the hospital setting. This initial approach was for brief information giving and permission for later contact. Informed consent was not sought at this point. The period of cohort recruitment occurred from 15 March to 17 December 2000.

4. Training of the PLO was covered in the first week of recruitment, by the AUT Pasifika Development Manager (PDM). Following this training period the PLO then covered each day of the recruitment period and the PDM relieved her in the evenings and weekends initially, then one day per week. For potential participants who were either discharged home or to one of the two satellite hospitals prior to being seen by the Pacific Liaison Officer, a secondary recruitment procedure was carried out. In these situations, the Pacific Liaison Officer visited the mother outside of Middlemore Hospital to make the initial approach

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6. Approximately six weeks after birth, potential participants were allocated to a team of trained female Pacific interviewers fluent in both English and a Pacific language. In most cases the interviewers were ethnically matched with the potential participant.

7. The female interviewers visited the potential participants in their own homes and informed consent was obtained after full discussions had occurred with the parents.

Once informed consent was obtained the interview was carried out in the preferred language and the completed interview was returned to the office for coding and data entry procedures.

3.3.3 Recruitment and the provision of information and informed consent at the 12 & 24 month measurement point

1. When the children reached their first and second birthdays all maternal participants were re-contacted by a female Pacific interviewer and visited in their own homes.

2. Once informed consent was obtained from the mother the interview was carried out in the preferred language and the completed interview protocol was returned to the office for coding and data entry procedures.

3. At the time of the interview, mothers were asked to give permission for a male Pacific interviewer to contact and interview the father of the child.

4. If permission and paternal contact details were obtained then a Pacific male interviewer contacted the father to discuss participation in the study.

5. Once informed consent was obtained from the father the interview was carried out in the preferred language and returned to the office for coding and data entry procedures.

6. At the 24-month measurement point a member of the PIF child assessment team carried out a specific developmental child assessment at the family home.

3.3.4 Response Rates

Ninety-six percent (N =1590) of potentially eligible mothers of Pacific infants who had been born between 15 March and 17 December, 2000, gave consent to be visited in their homes when the infant was six weeks old. Of the 1477 mothers contacted and who met the eligibility criteria, 1376 (93.2%) agreed to participate in the study. A more conservative recruitment rate of 87.1% would include mothers who consented to contact and were (a) confirmed eligible, or (b) of

indeterminable eligibility due to inability to trace. Twenty-three of the 1376 mothers had given birth to twins, but with one twin member stillborn there was a total of 1398 children, including 45 twins, in the cohort.

Of the 1376 participating primary respondents, 1224 (89.0%) were re-interviewed at 12 months in relation to 1241 (88.8%) children including 36 twins. One twin child was no longer living with the mother, having been adopted and living in another country. Analyses were conducted to determine whether basic demographic variables of the primary respondents differed between those remaining in the cohort at 12 months and those lost to follow-up. Of the six variables examined (age, marital status, education, household income, ethnicity and country of birth), only ethnicity differed significantly between the two groups with fewer Tongans and Other Pacific mothers participating at the 12 month assessment point. Most frequent reasons for non follow-up of the 152 remaining participants included non-residency in Auckland at the time of the interview (49), inability to trace (47), refusal to be interviewed (11), inability to schedule an appointment (8) and the child not with the mother (6). Two children had died during the intervening year. Nine hundred and ninety nine of the mothers interviewed at one year had partners who met eligibility criteria to act as collateral respondents, of whom 825 (82.6%) were interviewed.

At 24 months, 1144 (83.1%) primary respondents were interviewed in relation to 1162 (83.1%) children including 38 twins. Of the six variables examined, younger mothers and those on lower incomes were less likely to be followed at the 24 month assessment point. Most common reasons for non follow-up of the remaining 232 study participants were inability to trace (93), non residency in Auckland at the time of the interview (72), refusal to be interviewed (35), child not with the mother (6) and inability to schedule an appointment (4). One child died during the interval between the one and two-year assessments bringing the total number of child deaths to three. Nine hundred and thirty eight mothers interviewed at two years had partners who were eligible to serve as collateral respondents, of whom 854 (91.0%) were interviewed.

One thousand and sixty four children, including 34 twins, were assessed at two years. This represented 76.1% of the 1398 children in the original cohort, 76.2% of the 1395 surviving children, and 91.6% of the 1162 surviving children whose mother had been interviewed at two years. Most frequent reasons for failure to assess the 98 children whose mother had been interviewed were non-consent by the mother (21), inability to trace (14), and non-residency in Auckland at the time of the interview (13), and inability to schedule an appointment (13).

3.3.5 General description of the cohort participants at the six-week, 12 and 24-month measurement points

Six-week measurement point

Of the 1376 primary respondents of the cohort (1.7% gave birth to twins), there were 1368 biological mothers, 1 foster mother, 6 adoptive mothers and 1 grandmother. The mean age of all mothers was 27.9 (SD=6.2) years, the range was 14 to 57 years, and 8% of mothers were younger than 20 years. The majority of mothers (n=1107; 80.5%) were living together in married or de-facto partnerships. Four hundred and fifty four mothers (33%) were New Zealand-born. The majority (n=535; 38.9%) of mothers had no formal educational qualifications, 464 (33.7%) had secondary school qualifications only, and 377 (27.4%) had post-school qualifications. Just over a quarter of infants were first-borns and 1339 infants (97.3%) were discharged with their mothers from hospital. Middlemore hospital records revealed that the mean birth weight was 3584 grams (SD = 613) with a range of 650 to 5390 grams.

Ethnicity of Pacific mothers was self-identified and also coded according to the sub-groupings of the 1996 Census. The ethnicity of 1398 infants of the cohort was categorised by the mothers' ethnicity. Of the cohort mothers, 650 (47.2%) self identified their major ethnic group as Samoan, 289 (21%) as Tongan, 232 (16.9%) as Cook Islands Maori, 59 (4.3%) as Niuean, 47 (3.4%) as Other Pacific (this includes mothers identifying equally with two or more Pacific groups, equally with Pacific and Non-Pacific groups, or with Pacific groups other than Samoan, Tongan, Cook Island or Niuean), and 99 (7.2%) as Non-Pacific. The infants with a Non-Pacific mother were eligible due to Pacific ethnicity through the father.

12-month measurement point

Of the 1224 primary respondents interviewed at one year, 1201 (98.1%) were the biological mothers of the children in the cohort, 12 were adoptive mothers, four were grandmothers, two were foster mothers and two were the biological fathers of the children. The three remaining primary respondents were a grandaunt, a cousin and a non-related caregiver. In view of the fact that the vast majority of primary respondents were the mothers of the children, the decision was made to refer to the primary respondents as mothers in this report. Of the 1224 mothers interviewed, 1207 (98.6%) had participated during the six-week assessment and 17 (1.4%) were different respondents. Of those interviewed at six-weeks, the mean age at follow-up was 28.9 (SD=6.1) years, the range was 15 to 46 years, and 3.8% were younger than 20 years. Most (n=977, 80.9%) were living with a partner, almost invariably the biological father of the child (80.4%), in a married

(57.4%) or de-facto (23.5%) relationship. Four hundred and four (33.5%) were New Zealand-born. With regard to highest educational qualification, 453 (37.5%) had no formal qualification, 405 (33.6%) had a secondary school qualification only and 349 (28.9%) had a post-school qualification. Five hundred and eighty three (48.3%) had previously self identified their major ethnic group as Samoan, 240 (19.9%) as Tongan, 207 (17.1%) as Cook Islands Maori, 57 (4.7%) as Niuean, 37 (3.1%) as Other Pacific and 83 (6.9%) as Non-Pacific.

Permission was required from the mothers to interview the father/father figure of the cohort child. Most of the 825 fathers interviewed at one year were the biological fathers (820, 99.4%) of the children. Most (n=786, 95.3%) were living with the biological mother of the child in a married (77.0%) or defacto (18.3%) relationship. The mean age was 32.1 (SD=7.3) years, the range was 17 to 65 years, and 0.9% of the fathers were younger than 20 years. Approximately one quarter (24.6%) of the fathers were born in New Zealand. Four hundred and forty fathers (53.3%) self identified their major ethnic group as Samoan, 199 (24.1%) as Tongan, 73 (8.8%) as Cook Islands Maori, 26 (3.2%) as Niuean, 28 (3.4%) as Other Pacific (this includes fathers identifying equally with two or more Pacific groups, equally with Pacific and Non-Pacific groups, or with Pacific groups other than Samoan, Tongan, Cook Island or Niuean), and 59 (7.2%) as Non-Pacific. The majority (n=481; 58.4%) of fathers had no formal educational qualifications, 220 (26.7%) had a secondary school qualification only, and 122 (14.8%) had a post-school qualification.

24-month measurement point

Of the 1144 primary respondents interviewed at two years, 1127 (98.5%) were the biological mothers of the children in the cohort, eight were adoptive mothers, six grandmothers, three the biological fathers and one a non-related caregiver. As previously, the vast majority of primary respondents were the mothers of the children, and therefore for ease of explanation will be referred to as mothers. Of these mothers, 1132 (99.0%) had been interviewed at the six-week assessment and 12 (1.0%) were different respondents. Of the 1132 mothers interviewed at six-weeks, the mean age at follow-up was 30.1 (SD=6.1) years, the range was 17 to 47 years, and 14 9 (1.2%) were younger than 20 years. Most (n=919, 81.2%) were living with a partner, almost invariably the biological father of the child (80.3%), in a married (62.4%) or defacto (17.9%) relationship. Three hundred and seventy (32.7%) were New Zealand-born. With regard to highest educational qualification, 406 (36.0%) had no formal qualification, 358 (31.7%) had a secondary school qualification only and 365 (32.3%) had a post-school qualification. Five hundred and forty one (47.8%) had previously self identified their major ethnic group as Samoan, 240 (21.2%) as

Tongan, 187 (16.5%) as Cook Islands Maori, 50 (4.4%) as Niuean, 33 (2.9%) as Other Pacific and 81 (7.2%) as Non-Pacific.

Of the 854 secondary respondents interviewed at two years, almost all (n=851, 99.6%) were the biological fathers of the children in the cohort with three adoptive or stepfathers. Most (n=810, 94.8%) were living with the biological mother of the child in a married (72.1%) or defacto (22.7%) relationship. Six hundred and sixty nine (78.3%) of the respondents had been interviewed at the one-year assessment. The mean age of these fathers was 33.5 (SD=7.4) years, the range was 18 to 64 years, and 0.1% of the fathers were younger than 20 years. Slightly less than one quarter (23.3%) of the fathers was born in New Zealand. Three hundred and fifty two fathers (52.6%) self identified their major ethnic group as Samoan, 170 (25.4%) as Tongan, 59 (8.8%) as Cook Islands Maori, 23 (3.4%) as Niuean, 23 (3.4%) as Other Pacific and 42 (6.3%) as Non-Pacific. With regard to highest educational qualification, 380 (57.1%) had no formal qualification, 172 (25.8%) had a secondary school qualification only and 114 (17.1%) had a post-school qualification.

Birth mothers served as respondents for 97.1% of 1064 child assessments at two years post birth. Mean (SD) height and weight of the children was 0.89m (4.4) and 14.4kg (2.2) respectively.

3.3.6 Ethnic representativeness of the cohort

Comparisons of the ethnic representativeness of the initial cohort recruited in 2000 have been made with the Pacific data available from Statistics New Zealand 1996 and the 2001 Census. This is possible as data are recorded on the ethnicity of all possible participants, including non-participants based on eligibility (e.g., not permanent New Zealand resident, infant deaths etc) and non-participants due to refusals. The cohort was drawn from Middlemore Hospital, South Auckland and was not intended to be representative of the total population. However, Middlemore has the largest number of Pacific Islands births in New Zealand, and the ethnic groupings are broadly representative of the Pacific census figures. For example when comparing with the 2001 Census the figures are Samoan 49% (2001 Census) and 47.2% (PIF cohort), Cook Islands Maori 23% (2001 Census) and 16.9% (PIF cohort), Tongan 18% (2001 Census) and 21% (PIF cohort), Niue 9% (2001 Census) and 4.3% (PIF cohort).

Note: Our classification of infant ethnicity differed from that used by Statistics New Zealand because it was weighted according to the Pacific component of ethnicity not the Maori component. Within the Statistics New Zealand classification those infants who had a Maori mother were identified as Maori whereas the infants in this cohort have been classified according to their Pacific parent (mother or father).

3.4 Assessment Methods

Information concerning the current and recent circumstances of the families was obtained through interviews conducted at three time points. The measurement framework for 12 and 24 months is presented in the Appendix. The first measurement point was an interview with the primary respondent six weeks after the birth of the child. Subsequent measurements were carried out with primary respondents (mothers) and where appropriate, secondary respondents (fathers) at the child's first and second birthdays. Participants were given the opportunity to respond in their primary languages. At the 12 and 24 month interview primary respondents were asked for contact details for the father/father figure of the child. All fathers contacted were invited to join the study at the 12 and 24 month data collection points. In order to carry out a specific developmental assessment of the child, an additional visit was made at the 24-month data collection point.

In addition, selected information was gathered from Middlemore Hospital birth records and the Royal New Zealand Plunket Society's records from their routine home visits that occur six weeks after birth.

3.4.1 Interviewer Reliability

A number of systems were in place to check on interviewer reliability. These included manual coding of each interview protocol to check consistency within the individual interview; random phone checks to participants to clarify specific details; and accompanying interviewers to check on rapport, informed consent and on the carrying out of standard procedures.

3.4.2 Development of the interview protocols

The interview protocols at each measurement point are primarily designed to gather quantitative data, however, several areas within the interview protocols are qualitative in order to explore some questions in more depth. In order to make a contribution to the understanding of Pacific child health and development in New Zealand, it was considered important to select content areas and employ measures deemed relevant and appropriate by both researchers and Pacific communities. To this end, there was extensive consultation with the Pacific communities. Furthermore, Pacific researchers within the PIF team had considerable input into the general measurement framework and specific measures used in the Study. The content and measures for the three measurement points are subjected to specific internal and external processes before inclusion in the interview protocol.

In order to gather scientifically rigorous data, due consideration is given to the employment of existing measures known to have acceptable psychometric properties. There are practical and theoretical reasons for applying internationally developed scales in the PIF Study: (a) to measure constructs that are universal across cultures (e.g. child motor development), (b) to elicit information that is considered to be important in terms of future child health and development, and (c) to demonstrate the appropriateness of existing scales and by analysis and review, further develop or reject them for ongoing research and/or clinical practice in a Pacific context.

From the outset, researchers recognised that employment of some existing assessment instruments may not be appropriate for these communities and that, ideally, the undertaking of discrete validation studies for these measures would be desirable. However, such a procedure was not practical for a variety of reasons including the extra funding that would be required, the burden on Pacific families and the amount of time needed to fully address validation issues. An alternative strategy was therefore adopted whereby standardised measures were employed in both the Pilot and the Main Studies and the appropriateness (reliability & validity) of these measures closely monitored. Where measures employed during the Pilot Study proved unsatisfactory (e.g., SF-12 health measure) they were removed from the Main Study. The psychometric properties of most standardised measures were at acceptable levels and modifications were not necessary. This is critical information in terms of the usefulness of these tools for clinical and other applications in the Pacific context. Most measures demonstrated very satisfactory internal consistency and validity. Some measures have undergone a focus group examination to check wording of items and testing procedures (Fox, 1994; Kreuger & Casey, 2000).

At six weeks the interview protocol was translated into Samoan, Tongan and Cook Islands Maori and was checked by fluent speakers of these Pacific languages to ensure that the translated versions matched the English version. In addition, the interview was individually administered by interviewers who were fluent in a Pacific language and were therefore were able to clarify concepts verbally where necessary. All participants were given the opportunity to use a translated interview protocol, however only 174 mothers (13%) took up this option. At 12 and 24 months the interview protocol was only translated into Tongan as the majority of those participants using a translated protocol at the six-week measurement point were of Tongan ethnicity.

3.4.3 Secondary data collection

Additional data was collected from Middlemore Hospital birth records, together with reports from Plunket visits at six weeks. These data were collected from secondary sources to lessen the burden on cohort mothers and infants. Medical birth details were collected from Middlemore and

the data from the comprehensive physical assessment carried out by Plunket at six-weeks meant that many of these dimensions did not need to be covered in the PIF interview. This minimised interview length. Thus, four measurement points are available for some key outcome variables. This allows for models to be fitted to individual developmental trajectories, incorporating individual, family, and environmental characteristics as covariates. The gathering of data from mothers, fathers and secondary sources allows the concordance between reports of child outcomes and parental functioning to be assessed. Testing for bias through differential attrition has been carried out at 12 and 24- months, and conditional analyses will be undertaken as appropriate (Rubin, 1976; 1987).

3.5 Data Analysis

All data, including that from open-ended questioning and interviewer observations, were coded and double entered into an electronic data base (SPSS Data Entry Builder 2.0) that employs comprehensive data validation and checking rules. Analyses incorporate a) scale formation, including the evaluation of reliability and stability of measures, and (b) exploratory and confirmatory hypothesis testing and statistical modelling.

Cross-sectional analyses at each assessment time are being undertaken, which will allow the prevalence of key outcomes to be estimated, as well as the association between risk factors and key outcome variables. Several longitudinal analysis techniques are being used in the modelling of developmental pathways. Specifically, structural equation modelling will be used to investigate latent constructs (Willet & Sayer, 1994). Mixed linear models are being used to assess the individual developmental pathways, by analysing the data collected at the three interviews (six weeks, 12 and 24 months) (Bryk & Raudenbush, 1987). In the analysis of binary outcome variables, generalised estimating equations will be employed to incorporate the multiple observations from each participant (Liang & Zeger, 1986).

At each data collection point there were a small number of open-ended questions in the interview protocols. Two researchers developed the codes for these questions based on the first 50 cases. The codes were checked on completion of this phase and collapsed or modified if necessary.

4.0 ETHICS AND CONFIDENTIALITY

Careful consideration was given to the ethical aspects of this longitudinal study with Pacific peoples. Ethical approval for the PIF Study was obtained from the Auckland Branch of the National

Ethics Committee, the Royal New Zealand Plunket Society and the South Auckland Health Clinical Board.

4.1 Data security

The data from the study are coded and held anonymously in secure storage under the responsibility of the Co-Directors in accordance with the requirements of the New Zealand Privacy Act (1993) and the Health Information Privacy Code (1994). All reference to participants is by code number only. Identification information is stored on a separate file and computer from that containing the actual data. All interviews are confidential and only PIF Study staff authorised by the Co-Directors have access to computerised data. All information is treated as sensitive data. Provision has been made for any participants who request that their data be disposed of at any time.

4.2 Emergency situations

As this is not a clinical trial but a community survey, low levels of emergency are expected however if the research unexpectedly identifies some condition unknown to the subject, they are advised to contact their usual adviser/practitioner. If any emergency situations arise such as suicidality, homicidality, abuse or neglect, a referral will be made to appropriate community services. Participants are always advised before a referral takes place. Confidentiality of respondents is preserved with great care and participants are informed of the legal limits of the confidentiality assurance given at the start of the interview.

5.0 THE RESEARCH TEAM

The *PIF: FTY* Study was undertaken by a team of researchers under the leadership of the two Directors, Dr Janis Paterson and Dr Colin Tukuitonga. The Management Group (Janis Paterson, Colin Tukuitonga, Esther Cowley-Malcolm, Max Abbott, Michael Feehan, Phil Silva, Teuila Percival, Jim Borrows, Sarnia Butler and Maynard Williams) had responsibility for general decision making and policy development to ensure optimum running of the Study.

Pacific and Non- Pacific researchers share various responsibilities across the different layers of the study. This structure is optimal as it draws on research expertise and skills across disciplines and brings ethnically and culturally diverse perspectives to the Study. In addition the PIF serves as an excellent platform for the advancement and training of Pacific researchers and field staff.

5.1 Investigators

Dr Janis Paterson and Dr Colin Tukuitonga as Directors of the PIF: FTY Study shared the scientific and management responsibility. They were directly responsible to the funders, the Pacific Peoples' Advisory Board and to the Pacific communities. During the PIF: FTY study, Dr Tukuitonga, in addition to his academic Pacific research role, was responsible for policy and strategic initiatives with government and non-government agencies at local and national levels. Dr Paterson was responsible for the daily running of the project relating to organisation and monitoring of all procedures. These roles were essential for effective co-ordination of the project and associated staff. In addition both Directors were principal investigators responsible for specific areas of investigation.

5.2 Co-Investigators

The co-investigators and the sub-contracted investigators all continue to assume academic leadership for their respective areas. They are Professor Max Abbott, Dr Teuila Percival, Associate Professor Michael Feehan, and Professor Phil Silva. Their roles include management of measurement issues, data collection, data handling, analysis, write-up, publication and dissemination. These procedures are undertaken following policies set by the Management Group. Other investigators include Ms Esther Tumama Cowley-Malcolm (community liaison), Maynard Williams and Lynne Giles (data management and biostatistics), Sarnia Butler (Research Fellow) and Jim Borrows (financial and project grant management).

5.3 Pacific Peoples Advisory Board

The two Directors were guided by the Pacific Peoples' Advisory Board who monitor the general direction of the Study. The Board was primarily set up to protect and enhance the Study in order to maximise benefits to the Pacific communities. The members of the advisory board for the *First Two Years of Life Study* were Laurel Taufauata, Christina Tapu, Ika Tameifuna, Metua Fa'asisila, and Reverand Fa'aleava Tautalaaso.

5.4 Field Staff

A team of male and female Pacific interviewers who were fluent in English as well as a Pacific language carried out the interviews with primary and secondary respondents. A separate team of Pacific child assessors administered the child development measurements to the child respondents. A South Auckland office provided a base for the interviewers and a collection point for completed interviews. All interviewers participated in intensive training sessions prior to the

commencement of each phase of the study. Ongoing monitoring of the interview process occurs via checking of each interview protocol and regular feedback to each interviewer. In addition, regular individual and group meetings are held with all interviewers to ensure optimum accuracy of data collection.

6.0 FUTURE DIRECTIONS: Transition to School

The *Pacific Islands Families Study: Transition to School (PIF: TTS)* is continuing to follow the cohort of Pacific children and their families and to assess the children's development and wellbeing at ages four and six years. This Study represents a necessary and logical extension to the *Pacific Islands Families Study*: *First Two Years of Life (PIF: FTY)* which identified a cohort of infants born at Middlemore Hospital in South Auckland over calendar year 2000. The *PIF: FTY* focused on the key developmental stage of early infancy and the influence of the socio-cultural context and family environment on Pacific children at ages six-weeks, 12 and 24 months. Whereas the goal of the *PIF-TTS*, which commenced in 2004, is to determine the pathways leading to successful adaptation as the cohort and their families negotiate critical developmental transitions, notably the transition to school.

Associate Professor Janis Paterson and Dr Teuila Percival are the Directors of the *PIF: TTS* Study and share scientific and management responsibility with the management group. The members of the *PIF: TTS* management group are Ms Esther Tumama Cowley-Malcolm (community liaison), Sarnia Butler (Research Fellow), Jim Borrows (financial and project grant management), and Professor Max Abbott.

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APPENDIX

PACIFIC ISLANDS FAMILIES STUDY: Summary of dimensions measured at 12 & 24 months

DIMENSION	DESCRIPTION	12 MONTH PRIMARY	12 MONTH COLLATERAL	24 MONTH PRIMARY	24 MONTH COLLATERAL	24 MONTH CHILD
SOCIO - DEMOGRAPHIC, CULTURAL AND ENVIRONMENTAL FACTORS						
Parental demographic profile	Gender, age, marital status, ethnicity, country of origin, years in NZ, religion, church involvement, education, present employment, income, economic problems	●	●	●	●	
Household composition	Family composition and relationships, e.g. other children, parent/parents, extended family, pets	●	●	●		
Housing	Type, facilities, appliances, heating, quality, cost, satisfaction, privacy and perceived crowding. A modified version of housing issues scale (Fuller et al.1993)	●		●		
Neighbourhood Problems	Neighbourhood Problems Scale (Steptoe & Feldman, 2001)			●		
Transport	Mode of usual transport, use of car seat in private vehicle	●		●		
Cultural orientation	A modified version of the General Ethnicity Questionnaire (Tsai, Ying & Lee, 2000).		●			
Traditional gift giving	Type and amount of traditional gifts given to family and church	●		●	●	
CHILD DEVELOPMENT						
Temperament	Toddler Temperament Scale (Fullard, McDevitt & Carey, 1978)	●	●			
Child behaviour	Parents as First Teachers (PAFT) Evaluation Study (Campbell & Silva, 1996).	●		●	●	
	Child Behaviour checklist (Achenbach et al., 1987)					●
	Attitudes & Beliefs about child behaviour (Zaslow et al., 1998,)					●

DIMENSION	DESCRIPTION	12 MONTH PRIMARY	12 MONTH COLLATERAL	24 MONTH PRIMARY	24 MONTH COLLATERAL	24 MONTH CHILD
Childhood activities & experiences	Activities Scale & the Experiences Scale (Silva, 1980)	●		●		
	Child involvement in Pacific cultural activities	●				
Cognitive, motor, psychosocial and language child development	Developmental milestones (American Academy of Paediatrics).	●		●		
	Bayley Toddler Neurodevelopmental Screener (Aylward, 1995)	●		●		
	Personal/ Social subscale from the Australasian Developmental Screening Test (Burdon, 1993).	●		●		
	Child Development Inventory-language (CDI) subscales (Ireton, 1992)			●		
	The Australasian Developmental Screening Test (Burdon, 1993).					●
Child anthropometric assessment	Weight, height, & head circumference measurement	●				●
Language development	The Reynell Developmental language Scales III (Edwards et al., 1997)					●
FAMILY & HOUSEHOLD DYNAMICS						
Sharing/ Support	Support from family members and others, sharing in the care of the baby	●		●		
Social support and recent life events	Accessibility and effectiveness of important relationships (Marshall & Barnett, 1993)			●	●	
Partner relationships	The Conflict Tactics Scale (CTS: Straus, 1990)			●	●	
Parent childhood history	Exposure to Abusive & Supportive Environments Parenting Inventory (EASE-PI: Nicholas & Bieber, 1997)		●			
Fathering roles	Attitudes to parenting, list of general tasks performed or not performed by father in the family, expectations and protectiveness of the child, & perceptions of parenting				●	

DIMENSION	DESCRIPTION	12 MONTH PRIMARY	12 MONTH COLLATERAL	24 MONTH PRIMARY	24 MONTH COLLATERAL	24 MONTH CHILD
CHILDCARE						
Parent participation in childcare	Child Care Activities Scale (CCAS; Cronenwett et al., 1988). Childcare activities: direct care activities, indirect care activities and play activities	●	●	●	●	
Parental Investment	Parental Investment in Children (PIC: Bradley et al., 1997)			●		
Childcare arrangements	Main caregiver of the baby; regular childcare arrangements (other than mother and father); extended family and/or other childcare arrangements (day-care)	●		●		
Discipline and nurturing	Parent Behaviour Checklist (Fox, 1994)	●	●	●	●	
	Attitudes towards physical discipline					●
Care-giving environment	The Short Form of the Home Observation Measurement of the Environment (HOME-SF) Activities available to child, restricted play, simple and complex toys, help or instructions provided by parent with novel toys and activities, use of books, level of collective or family activity (Caldwell & Bradley, 2003)	●		●		
	Home Observation Measurement of the Environment: Infant Toddler (HOME-IT) (Caldwell & Bradley, 2003)					●
Sleeping	Child's sleeping arrangements (modified from Plunket National Study),	●		●		
Feeding	Child and family nutrition, child feeding methods, problems and advice	●		●		

DIMENSION	DESCRIPTION	12 MONTH PRIMARY	12 MONTH COLLATERAL	24 MONTH PRIMARY	24 MONTH COLLATERAL	24 MONTH CHILD
LIFESTYLE FACTORS						
Alcohol consumption	Amount and frequency of alcohol consumption since pregnancy (items from Alcohol Use Disorders Identification Test (AUDIT: Saunders & Aasland, 1987)	●	●	●	●	
Smoking	Number of cigarettes smoked daily since birth; number of other household smokers during and since pregnancy	●	●	●	●	
Drug use	Frequency of illicit drug use in last 12 months	●	●	●	●	
Parental cultural activities	Parental participation in Pacific cultural events & activities	●			●	
PARENT & CHILD HEALTH ISSUES						
Parental health	General Health Questionnaire-12 (Goldberg, 1972; Goldberg & Williams, 1988)	●	●	●	●	
Life Events	Modified from NIH Study (USA) – Major life events in the last 6 months				●	
Parental Spiritual Health	Modified from Multidimensional Measurement of Religiousness/ Spirituality (Fetzer, 1999).	●	●			
Child Immunisation	Standard immunisations the child has received, reasons for non-immunisation, & parental attitudes to immunisation	●		●		
Child illness episodes	Child health visits, frequency and reason. Visits include general practitioner, doctor, hospital, specialist and/or traditional healer. Treatments given and satisfaction with treatment	●		●		
Otitis Media with effusion (OME) Screening & ear health assessment	Tympanometry assessment, number of coughs, colds and ear infections in the past year, advice sought for these health problems & action taken					●