DEVELOPING NEW APPROACHES FOR THE RECRUITMENT AND RETENTION OF INDIGENOUS PARTICIPANTS IN LONGITUDINAL RESEARCH

Lessons from *E Moe, Māmā: Maternal Sleep and Health in Aotearoa/New Zealand*

Sarah-Jane Paine[*]

Monique Priston[†]

T. Leigh Signal[‡]

Bronwyn Sweeney[§]

Diane Muller[¶]

---

[*] Senior Research Officer and Co-Associate Director, Sleep/Wake Research Centre, School of Public Health, Massey University, Wellington, New Zealand. Email: S.J.Paine@massey.ac.nz (corresponding author)

[†] Junior Research Officer, Sleep/Wake Research Centre, School of Public Health, Massey University, Wellington, New Zealand.

[‡] Senior Research Officer and Co-Associate Director, Sleep/Wake Research Centre, School of Public Health, Massey University, Wellington, New Zealand.

[§] PhD Candidate and Junior Research Officer, Sleep/Wake Research Centre, School of Public Health, Massey University, Wellington, New Zealand.

[¶] Junior Research Officer, Sleep/Wake Research Centre, School of Public Health, Massey University, Wellington, New Zealand.

Abstract

Recruitment and retention of participants in longitudinal studies relies on systems that support the participants throughout the research, and ensures high quality data management and protection. In addition, working with indigenous communities and participants requires specific processes that are informed by indigenous knowledge and understandings of the constituent properties underlying "good" and ethical research practice. This paper describes the development of a methodological approach to the recruitment of pregnant Māori and non-Māori women into a longitudinal study of maternal sleep, health and wellbeing (the *E Moe, Māmā: Maternal Sleep and Health in Aotearoa/New Zealand* study). We explore how Kaupapa Māori research methodology was conceptualised and embedded within the research framework and consider how the indigenous research ethics of whanaungatanga, manaakitanga and kaitiakitanga were operationalised to result in increased engagement between the research team and the Māori community. As a result of these processes, a total of 421 Māori and 768 non-Māori women enrolled in the *E Moe, Māmā* study. This paper outlines the strategies used to engage with Māori and promote the study in Māori communities and highlights the importance of developing research approaches for recruitment and retention of research participants that are aligned with Māori aspirations for research to achieve the goal of reducing Māori health disparities.

Keywords

recruitment and retention, longitudinal studies, Kaupapa Māori epidemiology, maternal health, Māori health

Introduction

There is an emerging body of literature that argues the importance of using indigenous research approaches within the context of epidemiology as a way of ensuring that Māori health needs are effectively addressed and understood at a comparable level to non-Māori (for example, Fink, Paine, Gander, Harris, & Purdie, 2011; Pitama et al., 2011; Robson & Reid, 2001; Simmonds, Robson, Cram, & Purdie, 2008; Te Rōpū Rangahau Hauora a Eru Pōmare, 2002). Kaupapa Māori research theory (Smith, 1999) is recognised as a powerful, culturally based methodology which was founded on at least three aspirations: (1) that the validity and legitimacy of being Māori is taken for granted; (2) that the survival of Māori language and customs is imperative; and (3) that Māori strive to take control over our own cultural wellbeing (Smith, 1997). Much of the discussion around Kaupapa Māori is related to notions of critique, resistance, struggle and emancipation (Smith, 1999). Kaupapa Māori research involves the analysis of power systems and structures and social inequalities (Pihama, Cram, & Walker, 2002). Kaupapa Māori is about retrieving space for Māori voices and the right to be Māori within wider society. In this way, Kaupapa Māori is about social change.

Kaupapa Māori theory has been used to develop robust methods for engaging Māori communities in research. For example, the *Hauora Manawa/Heart Health* study viewed Kaupapa Māori methodology as a way of ensuring that Māori beliefs, values and experiences were central to the research and that the research methods and analysis supported validating Māori realities. As a framework for conducting research it informed the way the research team approached the development of collaborative working relationships with the tribal authorities who represented their research communities, the Māori leadership of the research team, and the development of culturally appropriate clinical and research protocols that were used for data collection and dissemination (Pitama et al., 2011). In that project, Kaupapa Māori methodology resulted in high levels of engagement with Māori and provided a transparent platform for working with their key stakeholders. It also resulted in Māori participants feeling "welcome" within the research environment (Pitama et al., 2011).

Relatively few studies have shared the specific processes and procedures utilised to recruit and retain Māori participants into research projects, particularly longitudinal studies. The *Growing Up in New Zealand* study is a longitudinal prebirth cohort study of almost 7,000 children (18% Māori) and their families (Morton et al., 2013). The study had an explicit requirement that the sample would have adequate statistical power for Māori in order to ensure that the study outcomes would provide information that would advance Māori health and development and improve equity (Morton et al., 2012). A key factor underpinning Māori recruitment for *Growing Up in New Zealand* appears to be consultation with Māori within their study region via cultural advisory groups, who advised on how best to engage and promote awareness amongst Māori and community consultants, and who helped to ensure that processes for engagement were culturally appropriate and in line with Māori research ethics (Morton et al., 2012). The importance of engagement with Māori communities in the developmental stages of a longitudinal study was similarly articulated by the *Life and Living in Advanced Age* (LiLACS NZ) study, a longitudinal study of 421 Māori and 516 non-Māori adults aged 80 years and older. Dyall et al. (2013) suggest that strategies such as engagement with iwi authorities and health provider groups prior to the research beginning, formation of a Māori advisory group in addition to joint (Māori and non-Māori) research leadership, and inclusion of Māori members of the research team are critical for Māori recruitment (Dyall et al., 2013). Common to both of these studies is the acknowledgement that recruitment of Māori into longitudinal studies requires an approach to recruitment and retention that specifically addresses Māori aspirations for meaningful relationships between the participants, their communities, and the researchers.

This paper describes the development of a methodological approach that was designed to support the recruitment and retention of pregnant Māori women into a longitudinal study of maternal sleep, health and wellbeing. It explores the application of Kaupapa Māori epidemiological research methods and demonstrates how tikanga Māori and Māori research ethics can be operationalised to result in increased engagement between researchers and the Māori community.

Background

The *E Moe, Māmā: Maternal Sleep and Health in Aotearoa/New Zealand* study (hereafter referred to as the *E Moe, Māmā* study) is a large, questionnaire-based project being conducted by a multidisciplinary team of researchers hosted by the Sleep/Wake Research Centre (Massey University, Wellington). The aims are to investigate the relationship between sleep across the perinatal period and a range of maternal health outcomes including the need for medical intervention during birth (Lee & Gay, 2004) and changes in postpartum mood (Goyal, Gay, & Lee, 2007). Participants completed written questionnaires between 35–37 weeks gestation and at 12 weeks postpartum, and took part in a 5- to 10-minute telephone interview between 4–6 weeks postpartum. Questionnaires were available in both English and Māori, and could be returned in a pre-paid addressed envelope, or completed over the phone with a research team member. Participants received a small koha (NZ$40 of gift vouchers) for their time and commitment to the study. Avenues for contacting the research team included a toll-free telephone number, free text messaging service, email and a dedicated study website.

Developing a new approach to conducting sleep epidemiology

It is argued that to respect human and indigenous rights, epidemiological methods must gather information of sufficient depth and breadth to make it possible to monitor the impact of government policies and actions that affect indigenous health (Robson, 2005). Over the last 12 years the Sleep/Wake Research Centre has worked with Te Rōpū Rangahau Hauora a Eru Pōmare (University of Otago, Wellington) to develop a programme of epidemiological research designed to investigate the prevalence, risk factors and consequences of sleep problems and sleep disorders in New Zealand (Mihaere et al., 2009; Paine, Gander, Harris, & Reid, 2004; Paine, Gander, & Travier, 2006). This programme was developed within a health inequalities framework, thus focusing on disparities in the prevalence of sleep problems between Māori and non-Māori. It is also informed by Māori rights to the highest attainable health, including the right to health care and to the social and economic determinants of health (Hunt, 2006; Yamin, 2005), as guaranteed by international conventions (Grad, 2002). In New Zealand, indigenous rights are reinforced by the Treaty of Waitangi, signed in 1840 by Māori and the British Crown. Although widely debated, the basic tenets of the Treaty revolve around the governance agreement for non-Māori settlement, and a guarantee of Māori interests against the negative impacts from settlement, both immediate and ongoing. Current health disparities between Māori and non-Māori can be seen in this context as a breach of Māori rights under the Treaty of Waitangi (Reid & Robson, 2007).

This sleep epidemiological programme is also grounded in Kaupapa Māori research theory (Smith, 1999). At the Sleep/Wake Research Centre, Kaupapa Māori epidemiological research is specifically viewed as an approach to research that brings Māori from the margins to the centre, and views Māori as “the norm”. By prioritising Māori needs within research, and focusing on providing useful outcomes for Māori, Kaupapa Māori research helps to define the issues that are explored, the questions that are asked, the methods that are used, and the interpretation that is given (Smith, 1999).

In the context of the *E Moe, Māmā* study, three overarching research principles were developed from the Kaupapa Māori epidemiological paradigm (Simmonds et al., 2008):

1. *Māori participation and control at all stages of the research*. Māori involvement at the level of decision-making is supported via a partnership model of governance and leadership which includes the involvement of a Māori co-Principal Investigator and a senior Māori health researcher on the expert advisory group. Māori researchers lead all processes related to Māori recruitment and retention, taking responsibility for the development of relationships with Māori communities, organisations and end-user groups in order to facilitate promotion and dissemination of the study within the community. They also act as kaitiaki of the Māori participants and their information throughout the research process.
2. *Appropriate classification of different ethnic groups to identify and monitor health disparities* (Cormack & Harris, 2009; Robson & Reid, 2001). Self-identified ethnicity is recommended as the standard for study and commentary in health (Ministry of Health, 2004), and is usual practice in New Zealand. Thus, self-identified ethnicity is collected at every data collection stage. In accordance with our Treaty of

Waitangi approach, this programme of research utilises a Māori–non-Māori analytical framework as a way of identifying disparities in health outcomes and monitoring government action with regards to eliminating ethnic inequalities in health (Reid & Robson, 2007). In practice, any participants who identify as Māori, either alone or as one of multiple ethnicities, are classified as Māori in the analysis, with everyone else classified as non-Māori.

3. *Equal explanatory and analytical power* recognises Māori statistical needs as having equal status with those of the total population (Te Rōpū Rangahau Hauora a Eru Pōmare, 2002). Having equal numbers of Māori and non-Māori in epidemiological studies ensures that the information generated is useful and relevant for both communities, as well as enabling the exploration of potential explanations for differences between both groups (Te Rōpū Rangahau Hauora a Eru Pōmare, 2002). Power calculations conducted in the planning stages considered the importance of being able to detect differences between Māori and non-Māori across a number of different outcomes, thus our goal was to recruit 500 self-identified Māori and 500 non-Māori participants.

Recruitment of pregnant women into a longitudinal study

The initial recruitment methods considered for use in the *E Moe, Māmā* study were developed as part of an earlier feasibility study conducted through a limited number of locations (Sweeney, Signal, Gander, & Ellison-Loschmann, 2008). Feedback from focus groups and the recruitment and retention rates suggested that the processes worked well. However, none of the participants in this study identified as Māori. Thus, in order to meet our goal of achieving equal explanatory power it was important that the processes used in the full study were specifically tailored for Māori.

Recruitment for the *E Moe, Māmā* study began in late October 2009 and our primary strategy involved engagement with groups and individuals who had direct contact with pregnant women in the provision of antenatal care and education. In most instances this was a Lead Maternity Carer (LMC), which includes midwives, general practitioners and obstetricians. However, to extend our reach across the Māori community we also sought to develop relationships with community-based health and social service providers. Māori researchers met with each provider to ensure that they fully understood the aims and objectives of the study, to discuss the potential risks and benefits for the participants, their family and communities, and to discuss strategies to reduce the potential burden on these key groups.

The providers were invited to support the study by acting as a recruitment site with responsibility for distributing study information packs to their clients on behalf of the research team. In the instance that an individual or organisation was not able to act as a recruitment site, the research team provided posters and fliers to distribute to their community members as a way of promoting the study. The promotional posters and fliers were also distributed to pathology laboratories, medical centres, and child health services.

Initially, recruitment was restricted to the geographical regions closest to the team in order to facilitate ease of access, communication and support between recruitment sites, participants and the research team. After 10 months of following this strategy it became clear that Māori were significantly under-represented in the study sample, with only 12% of all women enrolled identifying as Māori (59 out of 485 enrolments). Although the research team were aware that the recruitment strategy would require careful consideration and refinement throughout the data collection period, the differential in enrolment rates between Māori and non-Māori was unexpected. Thus, in October 2010 the research team embarked on a new approach to increase Māori engagement and participation in the study.

Developing a Kaupapa Māori approach to recruitment and retention

Figure 1 illustrates the monthly fluctuations in the Māori recruitment rate across the 2-year enrolment period. Of particular note is the sharp increase in the number of Māori women who enrolled in the study between September (10 enrolments) and November 2010 (37 enrolments). We believe that this is the result of key changes to the Māori recruitment strategy which were developed within the context of the overarching Kaupapa Māori epidemiological principles informing this study.

Firstly, enrolment into the study closed to non-Māori women in October 2010 as the target sample size for this group had been surpassed. To do this, all women who contacted the research team to enquire about the study were asked their ethnicity, and enrolment was restricted to women who identified as Māori as per the study protocol.

The second important change was the extension of the sampling frame nationwide as a way of increasing the potential pool of participants eligible to take part. Since the research team were unable to develop relationships with recruitment sites around New Zealand, a comprehensive media and advertising strategy was launched to increase public awareness of the study and focus attention on the importance of recruiting Māori women. This involved: (1) a media release to major news agencies, and subsequent interviews with Māori and mainstream television, newspaper and radio media; (2) an email outlining the study aims and objectives which was sent to iwi and Māori health organisations to distribute through their mailing lists; (3) paid radio advertisements on major stations with wide distribution and high Māori listenership; (4) feature articles in national and iwi-based magazines; (5) online promotions and advertisements via social and Māori media websites; and (6) recruitment booths at sporting and cultural events.

We also employed "local champions" in four different communities around the North Island as a way of providing a "face" for the *E Moe, Māmā* study in regions distant to the research team. These Māori women distributed promotional material, gave interviews with local media, and attended events they identified as useful environments for recruitment of pregnant Māori women. Importantly, enlisting the

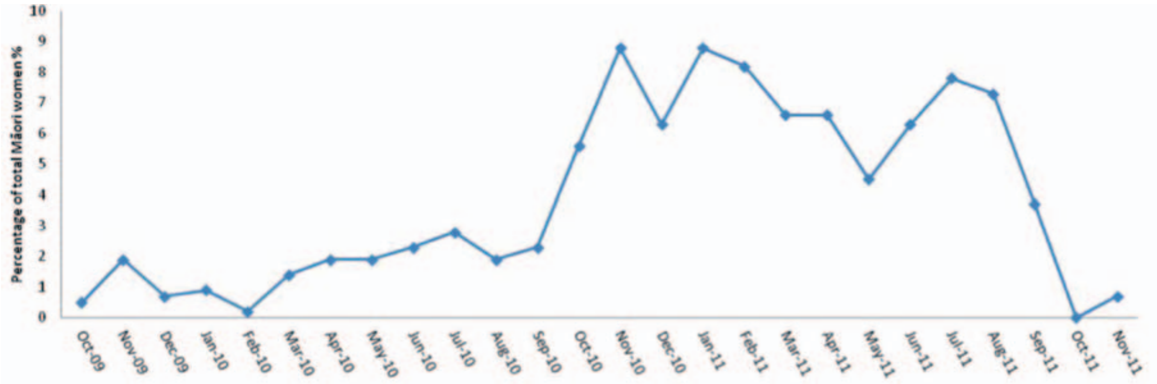

FIGURE 1 Māori enrolment rate by month in the *E Moe, Māmā: Maternal Sleep and Health in Aotearoa/New Zealand* study. The revised Māori recruitment strategy began on 1 October 2010. The initial recruitment strategy was used in Year 1 (October 2009 to September 2010) and the revised recruitment strategy in Year 2 (October 2010 to November 2011). A total of 421 Māori and 768 non-Māori women enrolled in this study.

assistance of local champions enabled potential participants to engage directly with the study and be better supported to assess the risks and benefits of the study. The local champions were considered part of the research team and thus were also supported in their activities by the project leaders and other research team members.

As a longitudinal study (three data collection points across a 4- to 5-month period) it was vital that our methodological approach did not stop at the point of recruitment into the study. Participant retention is vital for the success of longitudinal studies (Hunt & White, 1998) with international evidence suggesting that attrition is more likely amongst people who are more socioeconomically deprived, belong to ethnic minority groups, are relatively younger or older, and are at greater risk of ill-health (Booker, Harding, & Benseval, 2011). Our previous experience conducting population-based cross-sectional surveys (Fink et al., 2011), and the potential impact of higher mobility amongst the Māori population (Cormack, 2007) on maintaining participant contact led to the development of a retention strategy in the *E Moe, Māmā* study that would ensure that Māori participants were engaged, supported and encouraged at all stages of the research. Successful strategies included increased communication from the Māori research team via phone, text and email to remind participants to complete questionnaires at the appropriate times and to provide an opportunity to answer questions they may have had. The research team also offered "appointments" whereby the participants could indicate preferred days and times when they would be able to answer the questionnaires over the phone with a Māori researcher. Finally, the research team arranged for questionnaires to be collected directly from the participants' homes via a courier service to help facilitate the return of completed questionnaires. These strategies were particularly important for the 12-week postpartum questionnaire as the participants were often especially busy with their new baby at this time.

Using indigenous research ethics to inform participant recruitment and retention

All human subjects research in New Zealand is required to abide by "national ethical guidelines" which provide researchers with information to ensure that all health and disability research is conducted in a consistent and ethical manner (National Ethics Advisory Committee, 2012). Amongst other things, the guidelines specifically acknowledge the need to "reflect the principles of the Treaty of Waitangi and protect Māori cultural interests, promote the wellbeing of Māori and ensure mechanisms for Māori participation in both research and ethical review" (p. iii). The ethical approval process undertaken by the *E Moe, Māmā* study required any individuals or organisations that agreed to assist with recruitment to consider and sign a locality agreement, which stipulated the terms of the relationship between each recruitment site and the research team. For the *E Moe, Māmā* study team, the development of a trusting and "ethical" relationship with recruitment sites and study participants was further facilitated via our Kaupapa Māori research approach and understanding of Māori research ethics (Cram, 2001; Paine, 2006; Smith, 1999) and in particular the tikanga Māori principles of whanaungatanga, manaakitanga and kaitiakitanga which provided the framework underlying the Māori recruitment and retention strategy.

Whanaungatanga

Central to tikanga Māori, and at the heart of Kaupapa Māori theory, is whānau and the practice of whanaungatanga or relationship building. Whanaungatanga is fundamental to Māori identity, as it relates to whakapapa, which is integral to how Māori view and see the world (Mead, 2003). Whanaungatanga reinforces the importance of relationships and extends beyond whakapapa to non-kin people who are connected through shared experiences (Mead, 2003). For Māori, some of these experiences are connected to colonisation and imperialist research practices (Smith, 1999).

As a research ethic, whanaungatanga is about spending time building and developing trusting relationships and seeking out common connections and aspirations (Paine, 2006). It also acknowledges the different but complementary roles of researchers and communities within this relationship and reduces the space between researchers and "the researched", thereby addressing issues of power (Cram, 2001). Whanaungatanga was a key priority in the *E Moe, Māmā* study, with the most successful recruitment strategies underpinned by effective interactions between the researchers, the recruitment sites, and the study participants.

Observing the concept of he kanohi kitea (Mead, 2003) was a crucial part of establishing trusting relationships between the research team and the recruitment sites. Tikanga Māori was incorporated during meetings through the use of mihimihi and koha. These meetings provided an opportunity for recruitment sites to voice their concerns about the study specifically and also about research and research institutions more generally.

The use of Kaupapa Māori principles in the *E Moe, Māmā* study and our strong focus on Māori health gain provided many of the recruitment sites with confidence that the research would be conducted in the tika or right way. In some circumstances, whanaungatanga facilitated the establishment of specific recruitment sites as the Māori researchers revealed their genealogical connections to the area. Whanaungatanga was also achieved via the local champions who supported Māori recruitment in their own regions and amongst their own people.

Manaakitanga

Manaakitanga is based on the notions of sharing, caring, being respectful and nurturing relationships (Mead, 2003; Smith, 1999). Thus, as a research ethic, manaakitanga describes researchers' responsibilities to care for and nurture our research relationships, and encourages generosity through the sharing of skills and knowledge (Paine, 2006). Manaakitanga also reinforces the expected standards of behaviour required of researchers throughout the study process and also suggests that the researchers' obligations to the community may extend beyond the immediate project (Pihama et al., 2002; Smith, 1999). Manaakitanga therefore also facilitates reciprocity and the process of giving back to those who have helped with the research.

Knowledge transfer is an important outcome for the *E Moe, Māmā* study. It provides an opportunity for the research team to offer professional courses and workshops to increase health provider and community awareness about the importance of sleep for their own health, safety and wellbeing, in addition to that of their clients. Effective dissemination of the study results will also require engagement and support from the recruitment sites as advocates of health and wellbeing within their communities. A range of resources (for example, study pamphlets, educational booklets and professional workshops) will be delivered and disseminated at the conclusion of the study not only to describe the major study findings, but to support health providers to promote good sleep practices amongst their communities.

With regards to our research participants, manaakitanga was observed through the provision of koha in recognition of the time and effort required to take part in the study. The research team were available to answer questions about the study or discuss any concerns during business hours throughout the course of the entire project. Importantly, any participants who had elevated scores on the Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden, & Sagovsky, 1987) (a validated scale that was included in the questionnaires and is used to screen for symptoms of postnatal depression) were contacted immediately by a trained researcher who discussed the meaning of this scale and their score with the participant and determined whether or not the participant wanted or required further assistance from a health professional. If so, a letter explaining the participant's involvement in the *E Moe, Māmā* study, their elevated risk of postnatal depression and their need for further assessment was sent to their LMC or general practitioner. In cases where a high risk of postnatal depression or safety concern was identified, the research team were supported by the local maternal mental health team. Women who did not consent to a referral being made (n = 28 Māori women with elevated EPDS scores) were strongly encouraged to speak with their LMC, general practitioner, or other health care provider, to discuss their sleep and how they were feeling. In addition, they were provided with a list of websites to find information and/or access other forms of support and reminded that they could contact the research team if they decided that they would like further assistance. Whilst "intervening" in this way may have impacted on our overall prevalence rates for post-natal depression, the research team felt strongly that the process of informing the participants of their elevated scores was part of our commitment to uphold the ethical principles of whanaungatanga, manaakitanga and kaitiakitanga.

Kaitiakitanga

Kaitiakitanga means "to protect, guard, serve" (Marsden & Henare, 1992), therefore as kaitiaki one would take on a guardianship or a protector role. As a research ethic, kaitiakitanga reminds researchers that decision-making must focus on the protection of the research participants, their values, and their knowledge (Paine, 2006). This principle also reinforces the hope that research will be an empowering experience, therefore the approach and methods used should reflect the aspirations of the Māori community (Smith, 1999).

Within the *E Moe, Māmā* study, kaitiakitanga reflects the important role of the Māori researchers as guardians of the participants and their information, both now and in the future. Beyond the ethical principles of participant confidentiality and/or anonymity, kaitiakitanga in this study means that the Kaupapa Māori and health inequalities framework will be applied during data analysis and interpretation, to ensure that the research findings are useful and relevant for Māori, and that victim-blaming is avoided by taking a broader view of the drivers of disparities in sleep and health between Māori and non-Māori. Specifically, the interpretation and discussion of findings will focus on the provision of interventions across multiple levels of the health sector including guidelines to protect women and their family from postnatal depression, and information on the range and distribution of risk factors that contribute to ethnic disparities in the prevalence of sleep problems which can be used to inform the development of health services and policies to reduce and eliminate such inequities.

Conclusion

Despite growing recognition by contemporary longitudinal studies of the importance of having equal explanatory power for enabling Māori health gains, there is still relatively limited detailed information about the specific processes and systems that are used to engage with Māori communities to facilitate recruitment and retention. This paper presents a methodological approach that was developed to increase Māori participation and involvement in a longitudinal study designed to investigate sleep changes across the perinatal period and the relationships with maternal health, wellbeing and mood. The approach was informed by Kaupapa Māori research theory and Māori research ethics and multiple methods were utilised to engage with Māori communities. This study supports ongoing efforts and activities both in New Zealand and internationally to centralise indigenous knowledges and cultural practices as robust frameworks for conducting research with our communities. At the close of recruitment, a total of 421 Māori and 768 non-Māori women were enrolled in the study. Preliminary analyses indicate that we have sufficient power to detect differences between groups on the main questions of interest despite the target Māori sample size not being achieved within the data collection time frame. The average retention rate across all data collection time points was 92% for Māori and 94% for non-Māori. Thus, the present study makes a new and important contribution to the literature by demonstrating how Kaupapa Māori methodology can be used to support recruitment of Māori into longitudinal studies and enable exceptional retention rates across time.

Although the approach presented here was developed within a specific New Zealand context, many of the lessons learned and strategies utilised have wider relevance for those who are interested in engaging with indigenous or ethnic minority groups:

1. Māori involvement in the study leadership enables shared decision-making processes and models the importance of Māori–non-Māori partnership to the broader research team, advisory group, and research participants. Māori research team members, including local champions, can also facilitate greater community engagement and operationalisation of tikanga Māori and Māori research ethics.
2. Indigenous research methods and ethics can enhance the development of effective recruitment and retention strategies. Kaupapa Māori research methods and Māori research ethics provide a link between the research team and the Māori community and as rules for conduct they affirm Māori values and provide a mechanism for control within the research process.
3. Developing effective and meaningful relationships with the Māori community through iwi and health and social service providers is vital. Thus, study time frames and resourcing should take this into account.
4. Meeting face to face is an important aspect of relationship building and although this can be challenging when research participants are situated in diverse localities, utilising online, social and broadcast media can be a very effective recruitment method. Resourcing local champions to promote the research widely has benefits for the research project and also contributes to building research capacity and capability amongst Māori communities.
5. It was crucial that the revised recruitment approach was carefully and frequently monitored in order to evaluate its impact and allow the research team to modify strategies when necessary.
6. Retention of indigenous and/or ethnic minority groups in longitudinal research across time can be achieved through the development of processes that recognise the central role of trusting relationships between the researchers and participants. A commitment to having equal explanatory power not only encourages researchers to provide statistically robust research outcomes but can also drive the creation of innovative solutions that support the participants throughout the research process.

As a framework for conducting public health research, this approach illustrates the value of research partnerships, both with other research groups and with the communities of interest. Through these partnerships it is possible to achieve equal sample sizes and provide study outcomes that are of relevance to the whole community.

Glossary

E Moe, Māmā	"go to sleep, mothers"
he kanohi kitea	the face seen
iwi	tribe
kaitiaki	guardian
kaitiakitanga	to protect, guard, serve; guardianship
Kaupapa Māori	Māori ideology
koha	token of appreciation; sharing food, gifts and study resources
manaakitanga	hospitality
mihimihi	personal and professional introductions
tika	correct
tikanga Māori	Māori customs and practices
whakapapa	genealogy
whānau	family
whanaungatanga	kinship, relationship

References

Booker, C. L., Harding, S., & Benseval, M. (2011). A systematic review of retention methods in population-based cohort studies. *BMC Public Health*, *11*, 249.

Cormack, D. (2007). The Māori population. In B. Robson & R. Harris (Eds.), *Hauora: Māori standards of health IV. A study of the years 2000–2005*. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare.

Cormack, D., & Harris, R. (2009). *Issues in monitoring Māori health and ethnic disparities: An update*. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare, Department of Public Health, University of Otago.

Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry*, *150*(6), 782–786. doi:10.1192/bjp.150.6.782

Cram, F. (2001). Rangahau Māori: Tona Tika, Tona Pono—The validity and integrity of Māori research. In M. Tolich (Ed.), *Research ethics in Aotearoa New Zealand*. Auckland: Pearson Education New Zealand Limited.

Dyall, L., Kepa, M., Hayman, K., Teh, R., Moyes, S., Broad, J. B., & Kerse, N. (2013). Engagement and recruitment of Māori and non-Māori people of advanced age to LiLACS NZ. *Australian and New Zealand Journal of Public Health*, *37*(2), 124–131. doi:10.1111/1753–6405.12029

Fink, J. W., Paine, S. J., Gander, P. H., Harris, R., & Purdie, G. (2011). Changing response rates from Māori and non-Māori in national sleep health surveys. *New Zealand Medical Journal*, *124*(1328), 52–63.

Goyal, D., Gay, C. L., & Lee, K. A. (2007). Patterns of sleep disruption and depressive symptoms in new mothers. *Journal of Perinatal and Neonatal Nursing*, *21*(2), 123–129.

Grad, F. P. (2002). The preamble of the constitution of the World Health Organization. *Bulletin of the World Health Organization*, *80*(12), 983–984.

Hunt, J. R., & White, E. (1998). Retaining and tracking cohort study members. *Epidemiologic Reviews*, *20*(1), 57–70.

Hunt, P. (2006). The human right to the highest attainable standard of health: New opportunities and challenges. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, *100*, 603–607.

Lee, K. A., & Gay, C. L. (2004). Sleep in late pregnancy predicts length of labor and type of delivery.

American Journal of Obstetrics and Gynecology, *191*(6), 2041–2046.

Marsden, M., & Henare, T. A. (1992). *Kaitiakitanga. A definitive introduction to the holistic world view of the Māori*. Wellington: Ministry for the Environment.

Mead, H. M. (2003). *Tikanga Māori. Living by Māori values*. Wellington: Huia.

Mihaere, K. M., Harris, R., Gander, P. H., Reid, P. M., Purdie, G., Robson, B., & Neill, A. (2009). Obstructive sleep apnoea in New Zealand adults: Prevalence and risk factors among Māori and non-Māori. *Sleep*, *32*(7), 949–956.

Ministry of Health. (2004). *Ethnicity data protocols for the health and disability sector*. Wellington: Ministry of Health.

Morton, S. M. B., Atatoa Carr, P. E., Grant, C. C., Robinson, E. M., Bandara, D. K., Bird, A., & Wall, C. (2013). Cohort profile: Growing Up in New Zealand. *International Journal of Epidemiology*, *42*(1), 65–75. doi:10.1093/ije/dyr206

Morton, S. M. B., Grant, C. C., Atatoa Carr, P. E., Robinson, E. M., Kinloch, J. M., Fleming, C. J., & Liang, R. (2012). How do you recruit and retain a prebirth cohort? Lessons learnt from Growing Up in New Zealand. *Evaluation & the Health Professions*. doi:10.1177/0163278712462717

National Ethics Advisory Committee. (2012). *Ethical guidelines for observational studies: Observational research, audits and related activities* (Rev. ed.). Wellington: Ministry of Health.

Paine, S.-J. (2006). *Towards a balanced and ethically responsible approach understanding differences in sleep timing* (Doctoral dissertation). Massey University, Wellington.

Paine, S.-J., Gander, P. H., Harris, R., & Reid, P. (2004). Who reports insomnia? Relationships with age, sex, ethnicity and socioeconomic deprivation. *Sleep*, *27*(6), 1163–1169.

Paine, S.-J., Gander, P. H., & Travier, N. (2006). The epidemiology of morningness/eveningness: Influence of age, gender, ethnicity, and socioeconomic factors in adults (30–49 years). *Journal of Biological Rhythms*, *21*(1), 68–76.

Pihama, L., Cram, F., & Walker, S. (2002). Creating methodological space: A literature review of Kaupapa Māori research. *Canadian Journal of Native Education*, *26*(1), 30–43.

Pitama, S., Wells, J. E., Faatoese, A., Tikao-Mason, K., Robertson, P., Huria, T., & Cameron, V. A. (2011). A Kaupapa Māori approach to a community cohort study of heart disease in New Zealand. *Australian and New Zealand Journal of Public Health*, *35*(3), 249–255. doi:10.1111/j.1753–6405.2011.00702.x

Reid, P., & Robson, B. (2007). Understanding health inequities. In B. Robson & R. Harris (Eds.), *Hauora: Māori standards of health IV. A study of the years 2000–2005* (pp. 3–10). Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare.

Robson, B. (2005). *Meeting the statistical rights of indigenous peoples*. Paper presented at the International Association of Official Statistics. Satellite meeting on measuring indigenous and small populations, Wellington.

Robson, B., & Reid, P. (2001). *Ethnicity matters: Review of the measurement of ethnicity in official statistics. Māori perspectives paper for consultation*. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare for Statistics New Zealand.

Simmonds, S., Robson, B., Cram, F., & Purdie, G. (2008). Kaupapa Māori epidemiology. *Australian Epidemiologist*, *15*(1), 2–6.

Smith, G. (1997). *The development of Kaupapa Māori: Theory and praxis* (Doctoral dissertation). University of Auckland, Auckland.

Smith, L. T. (1999). *Decolonizing methodologies: Research and indigenous peoples*. London, England: Zed Books.

Sweeney, B. M., Signal, T. L., Gander, P. H., & Ellison-Loschmann, L. (2008). Sleep and sleepiness in late pregnancy. *Sleep and Biological Rhythms*, 6(Supplement 1), A42.

Te Rōpū Rangahau Hauora a Eru Pōmare. (2002). *Mana whakamārama—Equal explanatory power: Māori and non-Māori sample size in national health surveys*. Wellington: Department of Public Health, University of Otago.

Yamin, A. E. (2005). The right to health under international law and its relevance to the United States. *American Journal of Public Health*, *95*(7), 1156–1161.