Heru & Hapū Māmā: Reinstituting Traditional Practices To Reduce Smoking While Pregnant

Feasibility Trial
Evaluation Report
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Centre of Research Excellence:
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About Author

Toumairangi Marsh (Te Ātiawa ki Taranaki me Te Ātiawa ki Te Whanganui ā Tara) is a Master of Arts (Tikanga Māori) graduate from the University of Waikato. Since graduation, Toumairangi has returned back to Taranaki with the sole purpose of assisting her iwi and hapū (Ngāti Rāhiri ki Taranaki & Ngāti Te Whiti) to develop and pass on the various tikanga and kawa and create succession planning for the future stability of her people. She is also engaged in education (and in some cases, re-education) within the non-Māori community, to help them understand the Māori world and how it can function within and alongside the wider New Zealand and international community. Toumairangi conducted this work as an independent evaluator, that is, she had no prior engagement with KaiRua or with the Centre of Research Excellence: Indigenous Sovereignty & Smoking.

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The most thanks go to the māmā who generously shared their time and experiences in responding to the evaluation surveys. Thanks also to Patrick Salmon and KaiRua for their openness and honesty whilst bringing ancestral narratives centre stage in the modern world. I also want to thank the Centre of Research Excellence: Indigenous Sovereignty and Smoking for providing the funding to enable the feasibility trial and this evaluation to occur. This type of research was new to me and I am grateful to Dr Glover and Dr Selket, of the Centre, for all the guidance they have provided, and for their comments on draft evaluation materials and the final report, which has helped extend my skills. Finally, thank you to Burnt Orange for edits and lay-up of the report for publication.

Tū mai e moko. Te whakaata o ō mātua. Te moko o ō tīpuna.

Stand strong, o moko. The reflection of your parents. The blueprint of your ancestors.

(Traditional Māori proverb – Author Unknown)

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1.0 Introduction

In January 2020, KaiRua NZ Limited was funded by the Centre of Research Excellence: Indigenous Sovereignty & Smoking to conduct a feasibility trial of the KaiRua Heru & Hapū Māmā Programme. The Heru & Hapū Māmā Programme was designed by KaiRua to support pregnant Māori women to abstain from smoking. This report presents the results of an independent evaluation of the programme.

The Heru & Hapū Māmā feasibility trial aimed to:

- Develop and deliver an innovative kaupapa Māori whakatuarā hauora hapūtanga (pregnancy health promotion) programme to 25 pregnant wāhine Māori with one objective being to support them to abstain from smoking during their pregnancy.

- Trial the delivery of programme information, Māori knowledge and support via digital resources and platforms, including using augmented reality (AR) technology.

This evaluation sought to determine if the Heru and Hapū Māmā programme would be:

1. Attractive to pregnant Māori women who smoke (that is, they would enrol).

2. Potentially effective at supporting the women to reduce tobacco smoking or abstain from smoking altogether.

3. Acceptable to the enrolled women and associated stakeholders.

The objectives of the evaluation were to:

- Describe the Heru and Hapū Māmā Programme.

- Record and analyse programme and evaluation survey data e.g.:
  - How many women enrolled.
  - Their smoking status across the program.
  - How the women wore the heru and their perceptions of it.

- Interview 5 programme participants and 5 key stakeholders to determine the acceptability of the programme.

- Make recommendations for future programme development and delivery.

1.1 Who Is KaiRua?

To understand the drive behind KaiRua, we must first look at the name itself. The word KaiRua is comprised of two words: Kai – meaning food or sustenance – and Rua, meaning two or both. In the context of KaiRua, Kai is used to mean to feed or nourish, and Rua is used to mean acknowledging the duality of the divine whakapapa of the Māori god Tāne (Atua) and his union with the natural being of the earth, Hine Ahuone (first woman). KaiRua also believes that duality is represented in both our physical form and our spiritual connection to the environment and universe. KaiRua regards itself as focusing on nourishing that duality through meaningful practices of manaakitanga (care), kaitiakitanga (protection) and aroha ki te tangata (love for the people).

The KaiRua team is a collective of people who have ancestral ties to the various Māori tribes across New Zealand (NZ) and have connections internationally. KaiRua identifies those who interact and participate within the group as '*Relations*' or '*The Relation Nation*'. The use of the term "relations" links to the Māori concept of whānau. In the KaiRua context, the word whānau is translated by splitting the word into two distinct parts: *Whā,* translated to mean four, and *Nau*, translated to be anything that seeks sustenance from the planet. Dr Rangimarie (Rose) Pere articulated that anything that sought sustenance from within the four pillars of the planet is considered to be related (personal communication). KaiRua tikanga (cultural protocol) is applied within the KaiRua Facebook platform to ensure a safe space for people to share and learn in. The *relations* update and engage with each other through KaiRua Facebook posts, live streams, sharing of pictures, and creating and answering questionnaires. Each *relation* has the ability and opportunity to share what they are passionate about, what they are learning and what they learn from each other.

1.1.1 KaiRua Aims

KaiRua aims to build Indigenous capacity and advance Indigenous knowledge via strategies that help to address Indigenous concerns. Locally, KaiRua aims to build equity for Māori health and wellbeing by drawing on culturally inclusive approaches.

1.1.2 KaiRua Objectives

- To create programmes that engage people in learning.
- To establish systems that serve with care.
- To innovate and create initiatives that are of interest to the community of KaiRua.
- To strengthen the relativity of cultural practices and knowledge.

1.1.3 KaiRua Mission Statement

Kahuri tō whakāro, kahuri te Ao

Change your thinking, change the world.

KaiRua intends for all of those who participate within the 'Relation Nation' to work towards living their most authentic life.

1.2 Why Heru & Hapū Māmā?

In September 2019, KaiRua ran a poll of its membership on its Facebook platform to identify a single population from within the Relation Nation who required some extra support.

The following groups and ideas were posted by KaiRua for consideration. They were:

1. Hapū Māmā (who wanted to reduce their smoking during pregnancy).
2. Entrepreneurial pathways with indigenous knowledge.
3. Cultural narratives used as a healer.
4. Education and leadership through taonga.

The Relations voted Hapū Māmā as their top priority. This was the first step in creating the Heru & Hapū Māmā programme.

1.3 Importance of Reducing Tobacco Smoking While Pregnant

It is estimated that 7 million smoking-related global deaths occur per annum. Tobacco smoking is still a leading preventable cause of disease and premature death amongst Māori, who have had historically high smoking rates due to the introduction of tobacco to both men and women in the late 1700s and through the 1800s (Glover et al., 2020).

Smoking during pregnancy has specific ill-effects, not just on the māmā and her pregnancy, but also for the foetus. Babies exposed to intrauterine metabolites from tobacco smoke may experience prenatal and birthing risks, low birth weight, childhood respiratory disease, and increased risk of childhood cancers (Glover and Phillips, 2020).

Quitting smoking, particularly in the first trimester of pregnancy, and remaining abstinent protects the foetus from many of the known adverse effects of smoking (Einarson et al., 2009). Although it is ideal for all pregnant women to abstain from smoking, some are not able to quit (Lange et al., 2018).

Among some Indigenous women, smoking while pregnant is disproportionately higher than for the non-Indigenous populations (Gould et al., 2017; Askew et al.,

2019). However, what is known about smoking prevalence amongst Indigenous women who are pregnant has been largely based on research undertaken in the British-colonised countries of Canada, the United States, Australia and NZ (Gould et al., 2017).

1.3.1 Smoking While Pregnant Among Wāhine Māori

Reducing smoking amongst Māori women who are pregnant has been identified as important since the early 1990s. Smoking during pregnancy is a risk factor for Sudden Infant Death Syndrome (SIDS). At that time SIDS rates were alarming and public and political pressure to prevent SIDS was high. In 1991, the government began funding SIDS prevention programmes. Later the focus was changed to prevention of Sudden Unexpected Deaths in Infancy (SUDI) (Rutter & Walker, 2021). The various programmes, which focused mainly on getting parents to place infants to sleep on their back; stopping bedding from covering the infant's face; reducing bed-sharing and reducing infant exposure to second-hand smoke, did lower SUDI rates. But, between 2017 and 2019, 24% more babies died of SUDI than had died between 2013 and 2017. Of the 52 infant deaths, 70% were Māori (Bond, 2021).

In 1992, 50% of Māori adults smoked, but smoking while pregnant was 66% (Public Health Commission, 1994). In 1997, the rate of smoking while pregnant was reported to be 45% (Ministry of Health cited in Glover, 2004). One later study reported smoking during pregnancy was 34% among Māori women, which was still three times higher compared to non-Māori (11%) (Morton et al. 2010 cited in Roberts et al., 2017).

Though not smoking while pregnant and not smoking around infants has been a consistently delivered message, cessation assistance for hapū wāhine has not received equal or consistent attention.

It has been suggested that to reduce smoking among Indigenous peoples, cessation interventions need to be culturally inclusive and appropriate (Glover, 2005). Indigenous solutions to reduce smoking have not received sufficient

attention despite promising high quit rates (Glover et al, 2015; Thompson-Evans cited in Bullen & Glover, 2018, p.15).

1.4 Previous Kaupapa Māori Smoking Cessation Programmes

There have been several kaupapa Māori smoking cessation programmes based on mātauranga Māori and Māori tikanga over the last 30 years.

In the early 1990's Tahuna Minhinnick of Tahuna marae built a gym and developed the *Health Through the Marae* programme. Supporting members to stop smoking was one component of the programme. Alongside utilising the gym, people who smoked were given guidance on how to use wai (water) and a purpose-written karakia to assist in abstaining from smoking. Te Puni Kokiri (the Ministry of Māori Affairs) supported the development of the concept but the Ministry of Health did not approve funding to enable it to be replicated elsewhere.

Independently, in Taranaki during the 1990s, Māori community health workers Makere Wano and Alice Doorbar were asked by some Māori women who smoked to develop a cessation programme for them. The two kuia designed a *Noho Marae* programme, which was handed on to other Māori health providers in the Waikato. This was a residential rongoā Māori programme utilising detoxification, karakia, mirimiri, kōrero, and many other Māori practices and interactions that occur when staying on a marae together for 7-14 days. An evaluation found a 4-month quit rate of 35% among Noho Marae programme participants, versus 14% among the control group of unaided quitters (Glover, 2000). Despite the potential efficacy, the concept did not attract Government funding because the healthcare system did not fund cessation interventions until 2000.

In 2000, the Government funded the establishment of a national free Quitline service. A Māori cessation pilot programme, *Aukati Kai Paipa* (AKP), was also funded. Neither of these were kaupapa Māori programmes. The therapeutic cessation treatment component of AKP was based on American cessation theories, but the service providers were to be Māori and they were encouraged to deliver in a way that was consistent with their iwi tikanga or kawa. Nevertheless, the

evaluation concluded that the 29% quit rate for *Aukati Kai Paipa* 2000 was significantly higher than the 12.5% rate of quitting among Māori women in the general population (Ministry of Health, 2003). AKP did become a government-funded programme and was run across NZ for almost 15 years.

After the AKP pilot ended in 2003, different Māori leaders adapted international best practice models of cessation for use by Māori health providers, such as Tane (2011), Glover et al (2015), Glover, Kira and Smith (2016) and Roberts et al, (2017). The efficacy of incentives to encourage abstinence from smoking trialled by Glover et al (2015), was copied by other Māori health services – for example, *Whakahau Ora,* evaluated by Glover, Kira and Paterson, 2016a, and many District Health Boards (DHBs) throughout NZ (Jakob-Hoff et al., 2015 and *LIVING SMOKEFREE* evaluated by Glover et al., 2016b).

One previous authentic kaupapa Māori trial in the Waikato loosely replicated a solution to dependency upon smoking tobacco that was recorded in history books. In the early 1900s, a group of wāhine Māori from Raetihi were photographed wearing harakeke bindings around their wrists. It was said that the group of women tied their left and right wrists together to signify their pledge to not smoke and to promote the concept to others. The randomised controlled *Herehere* and *Aukati (Te HAA)* trial compared smoking status at 4 weeks, at the end of the 12-week programme, and at 3 months, for the *Te HAA* participants, versus a usual care control group. The intervention group attended a wānanga to learn to weave a wrist band to wear and learn a purpose-written aukati karakia. A supportive Facebook page was also established. Quit rates were more than double for the *Te HAA* group at 4 and 12 weeks, and on average 45% were not smoking at 3 months (Thompson-Evans cited in Bullen & Glover, 2018, p.15).

The Heru & Hapū Māmā Programme

2.0 The Heru & Hapū Māmā Programme

The Heru & Hapū Māmā programme continues the innovative work of previous Māori leaders in smoking cessation.

2.1 Adapting to a COVID-19 present world

The Heru & Hapū Māmā programme was initially designed and scheduled to be delivered face to face in Whakatane (situated on the East Coast of the North Island) and Hamilton (located in the Waikato region of the North Island).

The spread of COVID-19 internationally caused the NZ Government to implement extreme national lockdown measures from 25th March 2020. The lockdown orders required most educational, social, and business activities to be suspended for four weeks. Any research, businesses or health and social services deemed non-essential were ordered to close or have their staff work from home.

This lockdown coincided with the original launch date of the Heru & Hapū Māmā programme. The trial, as it was planned, was immediately halted and KaiRua quickly re-designed Heru & Hapū Māmā to be delivered remotely, utilising digital platforms and tools. The decision to continue the trial with an adapted programme was made because:

- Lockdown would reduce hapū māmā access to ante-natal, and extended whānau support at a critical time of potentially increased stress and need.
- The duration of the COVID-19 pandemic could not be predicted, meaning that the need for acceptable, effective, remote non-contact delivery of antenatal support urgently needed to be developed and tested.

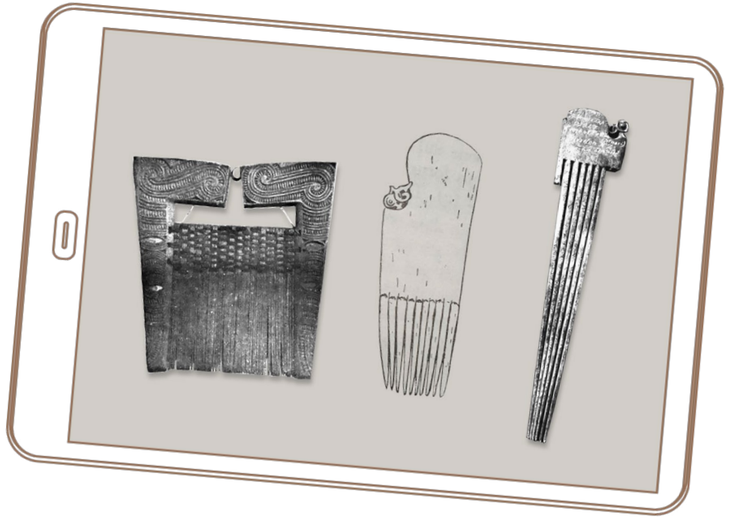
2.2 Programme Components

Heru & Hapū Māmā combined mātauranga Māori, traditional beliefs and practices, and taonga (tools and/or resources) with contemporary skills alongside

various methods of communication – digital mobile technology, AR technology and Facebook.

Table 1. Heru & Hapū Māmā programme components

MĀTAURANGA MĀORI	CONTEMPORARY
Whānaungatanga (become familiar with an individual or a group)	Facebook group (to join together as a group) Heru Merchandise (to support identification and a sense of belonging to the group and purpose)
Kaiako (Teachers) / Tohunga (Specialists)	Expert guidance
Wānanga	Filmed lessons (Digi-Wā)
Rauemi (resources): Heru	 Mobile phone app using AR
Kōrerorero	Hautaka (journal) SurveyMonkey



2.3 What are heru?

A heru is a decorative head comb, a taonga (treasured possession), regarded by Māori for its healing and protective capabilities. It is said that heru were traditionally used by men to fasten their hair into a topknot. In some tribes, the heru indicated the rank of the person wearing it. Heru were also used by Māori for mental health and wellbeing purposes. The heru was placed on the wearer's head and the healing would occur via the guardians carved into it. For example, in some tribal areas the heru was worn during and after tangihanga (funeral). Heru were also gifted to expectant mothers to support them during and after childbirth.

It was believed that heru helped decrease the risk of postnatal depression, as it allowed wearers to call upon the guardians carved into the heru for guidance and support, facilitating their focus on their newborns.

The literature suggests that there were two ways of wearing the heru; either forward on the head (heru tu rae), or at the back of the head (heru tikitiki) (Best, 1926).

As a part of the Heru & Hapū Māmā programme, māmā were given and encouraged to wear a heru when participating in the learning activities to invoke a

Above:
Fig 1: Traditional Heru (Best 1903) [left], Hiroa (1950) [middle], & Skinner (1930) [right].

Right:
Fig 2: KaiRua Heru resource given to all māmā.

sense of calm and focus. Māmā were also advised to wear their heru when they craved a smoke so as to connect them back to their ancestors and bring back a sense of equilibrium.

2.3.1 The kaupapa of heru

The kaupapa of heru use for hapū māmā begins with an understanding that the pregnant woman is a vessel for the infant. The spiritual being ascends through the spiritual gateway, which is found at the top of the head (fontanelle), then settles in the womb. The baby and the mother become one. The heru adorns the pregnant woman's head as a kaitiaki (guardian). This allows the mother and those supporting her to focus the mind, body, and soul into self-care and wellbeing during pregnancy (Salmon, 2021).

Patrick Salmon (the director of KaiRua) worked with Nichola Te Kiri to design a heru for the Heru & Hapū Māmā programme (see Figure 2). The design incorporated the need for the heru to trigger the AR App response. Thus, certain unique bold shapes were incorporated into the design and the AR App was programmed to recognise and respond to these. This design is also the KaiRua logo.

2.4 Mātauranga Hangarau / Information Technology

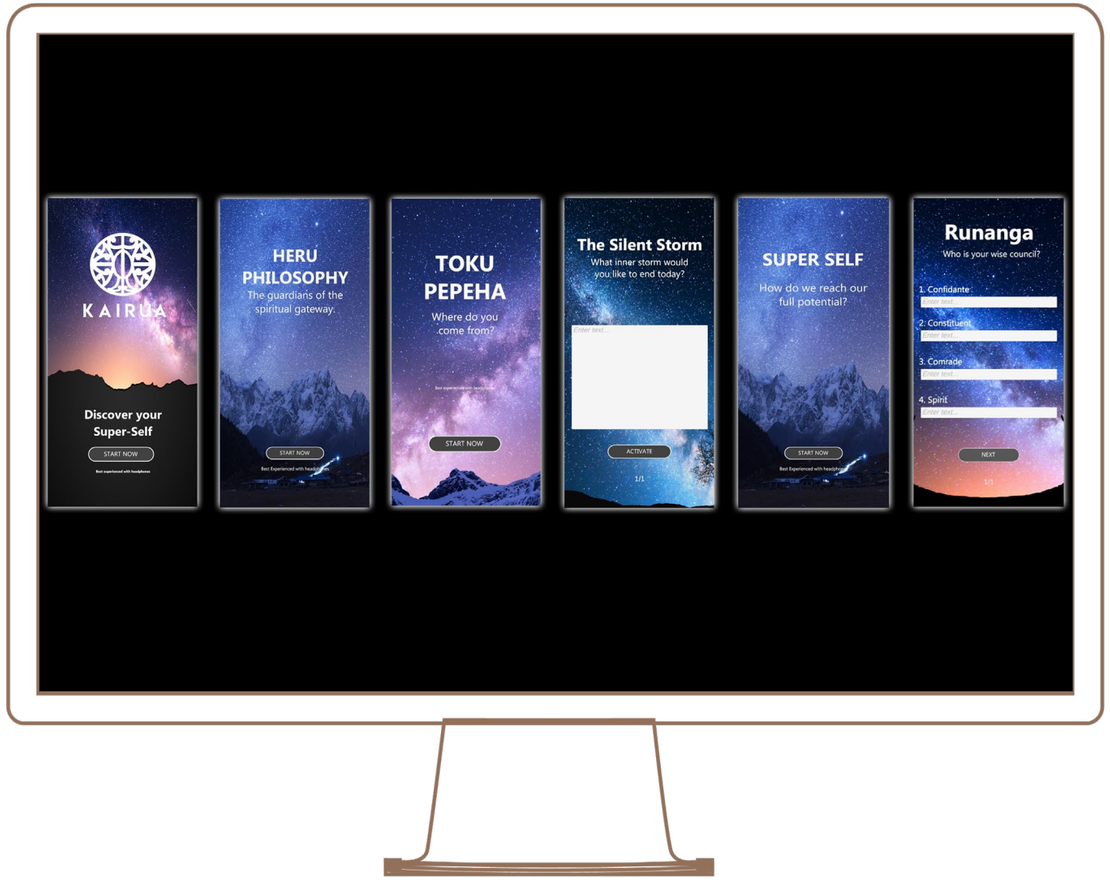
Indigenous peoples are no strangers to the internet (Dyson, 2001). The internet has played a significant role in ensuring that Indigenous people are able to disseminate their knowledge without reinterpretation via a western lens (Carpenter et al., 2016). Indigenous websites offer Indigenous peoples another space to preserve and revitalise cultural knowledge and connections.

The use of digital technology to store and share Māori knowledge has become an accessible way to store and share historical information (Brown & Nicolas, 2012), but it has also been questioned. Concerns have been expressed about the possible impact of 'virtualising' Māori knowledge, particularly the potential impact it could have on tikanga. There has been a suggestion that in utilising virtual space over the physical space, for example, the marae, people will move further away from these traditional spaces. The question then is 'How can Māori maintain the integrity of tikanga Māori alongside the digital world?' And, can Māori benefit from the potential opportunities technology presents?

2.4.1 mHealth

Healthcare services are increasingly operating across mobile digital platforms in different ways, including delivering behavioural change interventions, health screening, health record sharing, and health promotion and education. This new sector is variably called mHealth, digital health and eHealth. The delivery of healthcare services via digital and mobile technology and via the internet is rapidly evolving as various innovative technologies begin to be combined, such as using AR within mobile apps.

A sub-section of the smoking cessation field has been experimenting with these technologies to develop apps and connected devices to support people to stop smoking. For example, one programme used virtual reality to induce and expose users to cravings to smoke to prompt their exploration of craving cues. This was found to be successful (Hone-Blanchet et al., 2014).



Above:
Fig 3: Screenshots from the KaiRua AR Application.

Above:
Fig 4: An example of the AR visuals.

2.4.2 The KaiRua Mobile App

Rather than using a primarily didactic teaching style, KaiRua used mixed methods. A particularly innovative method was the use of AR technology within a mobile app to maximise experiential learning. The KaiRua App was created to increase the attraction of the programme by providing a cutting-edge technology experience. This was combined with teaching highly valuable tīpuna kōrero.

To use the KaiRua App, māmā had to first download the free app from either the Apple or Google Play store to their smartphone or a tablet device. The App contained oral narration from KaiRua based on their understanding of teachings pertaining to the traditional philosophy of:

- Heru
- Pepeha (traditional form of introducing oneself)
- Mū Ki Kino (silent storm / our deepest challenges)
- KaiRua (superself)
- Taonga (individual skills)
- Rūnanga (māmā support networks).

The māmā were prompted through the AR experience (see Figures 3 and 4) with questions and descriptions given about each section.

To activate the AR component of the programme, the KaiRua App prompted the māmā to hover their smartphone or tablet over either the heru itself, the KaiRua logo as displayed on the heru box, the KaiRua logo as printed onto KaiRua merchandise, or by printing out the KaiRua logo onto a piece of paper. Once the App recognised the logo, it would then begin the AR dialogue. Earbuds were provided so that participants could listen even when others were around.

2.5 Digi-Wā

Digi-Wā is a fusion of the words digital and wānanga (meet, discuss, deliberate) – therefore it can be regarded as a digital space of learning and discussion. Traditional Māori wānanga are confined to a specific marae or meeting space over a specific timeframe. Inability to attend can lead to participants missing out on key information or discussion that may not be discussed in the same manner in the future. Salmon believed Digi-Wā were an innovative way for Māori service delivery and education, without the restriction on the individual's time or availability to attend a specific venue.

Each Digi-Wā was approximately half an hour in length. They were short enough to be watched in one sitting, though the video remained on the Heru & Hapū Māmā Facebook site for the māmā to work through as their time permitted. The Digi-Wā were structured into sections to make it easy for the māmā to pause and revisit at a later time. Each Digi-Wā was narrated by Patrick Salmon. Māori practitioners presented distinct sections on a variety of topics.

Digi-Wā 1 presented two lessons:

- Learning about and beginning composition of an oriori for baby, presented by Hinewirangi Kohu-Morgan.
- Cooking with Hera Te Kūrapa, who demonstrated how to make corn fritters as an example of an activity māmā could do if experiencing sickness or cravings during pregnancy.

Digi-Wā 2 presented three lessons:

- Hinewirangi Kohu-Morgan talked about preparing a hue to be used for burying of the placenta; and she also talked about miscarriage and grief and the importance of having support people in place.

- Ninakaye Taane-Tinorau demonstrated breathing and stretching exercises.
- Kelly Spriggs and Rawinia Hohua talked about creating taonga (treasures) and rongoā (traditional Māori healing).

Digi-Wā 3 presented three lessons:

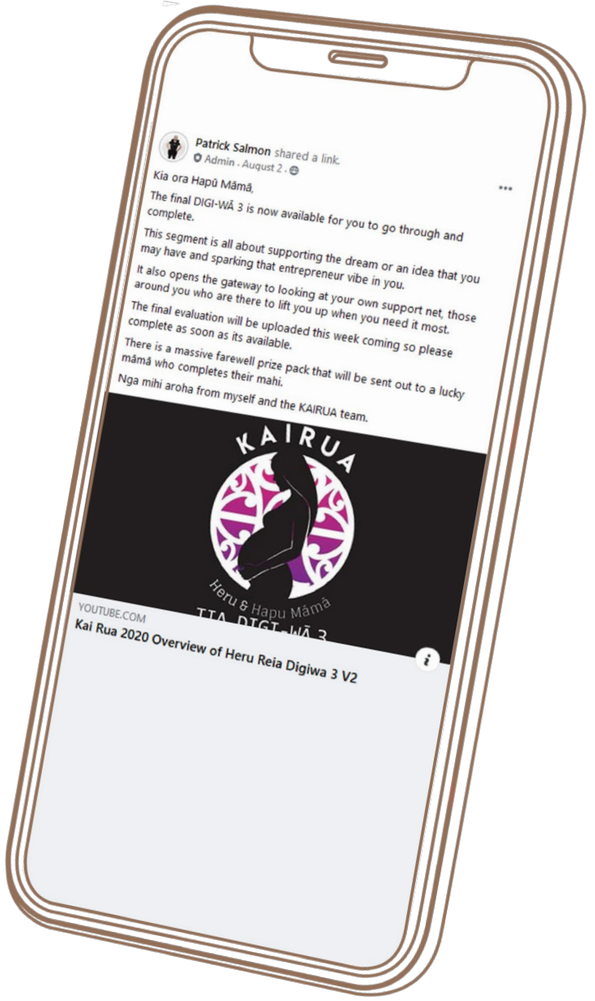
- Patrick Salmon discussed 'the taonga that lay within' which encouraged māmā to reflect on their particular talents or skills that they could utilise to develop a business idea or to enhance their lives.
- Natasha Willison talked about the AHU Coaching Framework[1] and how it relates to the māmā stopping smoking (e.g., identification of triggers to smoke).
- Patrick Salmon discussed 'identifying your rūnanga' (support network) to assist in moving forward with the stopping smoking journey.

[1]AHU is a personal development framework that uses culture, te reo Māori and whakapapa to strengthen identity and grow confidence.

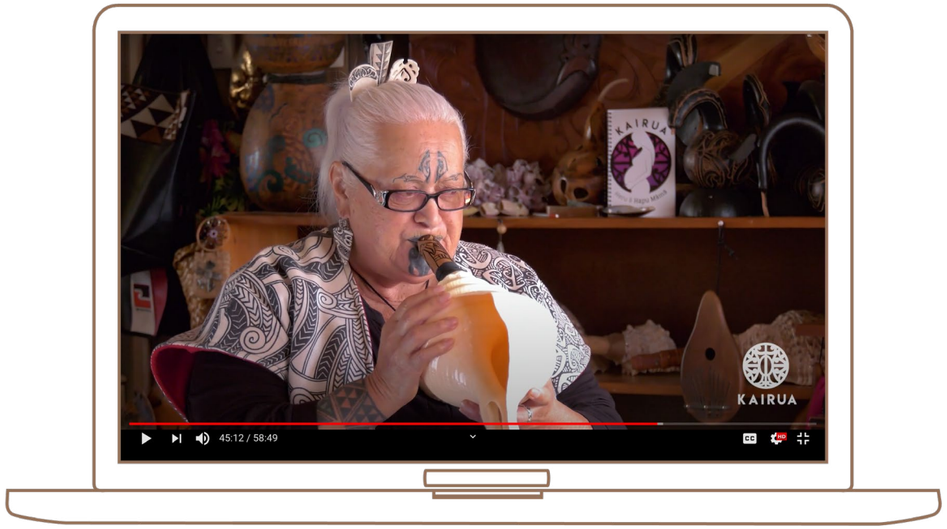
Throughout the Digi-Wā, QR codes were inserted alongside the practitioner's discussion (see Figure 5) to facilitate māmā access to more detailed cultural talks.

Above:
Fig 5: An example of QR code within the Digi-Wā.

Right:
Fig 6: Heru & Hapū Māmā Facebook Post announcing Digi-Wā 3.



Digi-Wā were scheduled to be launched at a rate of one a month, giving sufficient time for participants to wear the heru, assimilate the information presented in the Digi-Wā and tīpuna kōrero. The Heru & Hapū Māmā Facebook group was used to inform the māmā about when Digi-Wā were coming up (Figure 6). All Digi-Wā were posted on the Heru & Hapū Māmā Facebook Group and on a YouTube platform on May 14th, June 14th, and August 2nd, 2020.



2.5.1 Digi-Wā Māori practitioners

The Māori practitioners were selected based upon their knowledge and expertise in their respective fields.

Hinewirangi Kohu-Morgan
Hinewirangi (Ngāti Kahungunu ki Nuhaka, Ngāti Ranginui ki Tauranga Moana, Ngāti Porou ki Muriwai) has held many roles. She is the Director of Te Whānau o Te Rau Aroha Ltd, working at Waikeria Prison as a psychotherapist using Māori healing methods in her therapy with prisoners. She is also the Vice-Chair of the International Indian Treaty Council; a full member of the New Zealand Association of Physiotherapists; part of the women's collective, Ka Ata Mai working alongside Māori; part of Te Kotahi Research Institute at Waikato University; and she works also alongside Women's Refuge and Rape Crisis. Hinewirangi has a Master's in Applied Indigenous Knowledge from Waikato University; is a storyteller; a

Above:
Fig 7: Hinewirangi Kohu-Morgan demonstrating how to play a pūtatara.

Right:
Fig 8: Hera Te Kurapa preparing corn fritters.

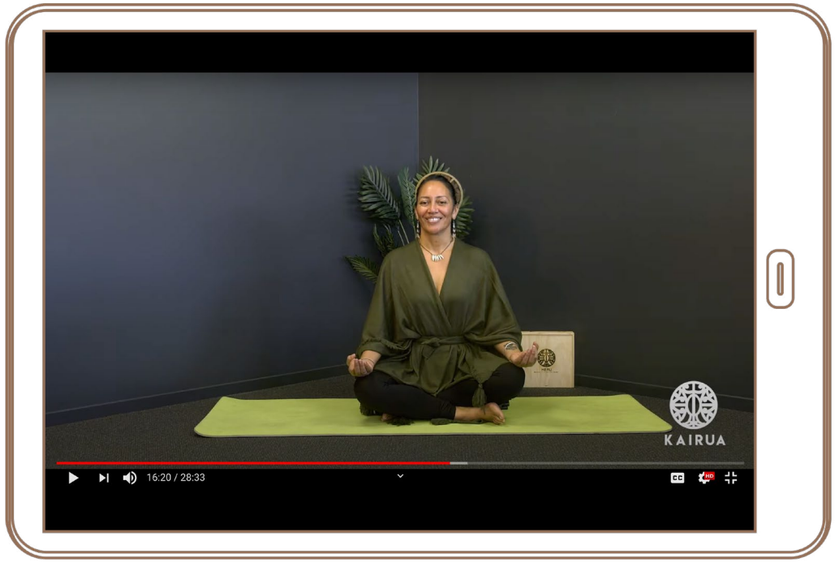
published poet and a taonga pūoro practitioner. In 2020, she received the NZ Order of Merit for her services to victim support.

Through life experience and intergenerational knowledge handed down to her from her elders, Hinewirangi provides mātauranga Māori to help individuals and groups discover a sense of self and purpose. Her contribution to the Digi-Wā included teaching the māmā the practice of oriori (traditional Māori lullaby) – their beginnings, how they are structured and how new parents can compose their own. In the second Digi-Wā, Hinewirangi imparted guidance and knowledge to help prepare māmā for grief, loss and trauma that expectant mothers may experience during their pregnancy journey, for example, due to miscarriage.

Hera Te Kurapa
Hera Te Kurapa is a past competitor on *My Kitchen Rules*; is the current host of her own TV programme, *Easy Eats*, on Māori Television; a Kaihaka and a mother of two. Her contribution to the Digi-Wā was to present a short and simple cooking tutorial within a discussion of how to alleviate cravings and what to eat to help māmā through nausea.

Ninakaye Taane-Tinorau

Ninakaye Taane-Tinorau (Ngāti Maniapoto) is the Managing Director of Tikidub Productions Ltd, Manager of Dirtydub Ltd; a Zumba instructor and one of only three people who teach Kemetic Yoga in NZ. Her contribution to the Digi-Wā was to teach māmā simple breathing and stretching techniques to use during their pregnancy. Ninakaye also participated on the Heru & Hapū Māmā Facebook page alongside midwife Kelly Spriggs to give their thoughts on their personal experiences of pregnancy and childbirth.



Left:
Fig 9: Ninakaye Taane-Tinorau demonstrating breathing posture.

Above:
Fig 10: Rawinia Hohua & Kelly Spriggs talking about creating taonga.

Rawinia Hohua & Kelly Spriggs

Rawinia Hohua and Kelly Spriggs both worked with Plunket to present the Whirihia programme within the Waikato region. The free two-day wānanga are run as a means to educate hapū māmā regarding pregnancy, childbirth, CPR for babies, and making their own vessels to hold the afterbirth following childbirth, and also traditional Māori umbilical cord ties. Kelly also runs her own Facebook group where she provides online Māori birthing support. Their lesson instructed māmā in how to find various natural resources (such as feathers and shells) to create their own taonga (treasures). Rawinia has experience working within the Māori maternal mental health and education sector for over 25 years. She also has knowledge and experience about rongoā Māori (Māori traditional medicine). In the Digi-Wā, she taught how māmā can utilise rongoā Māori as a means of supporting their smoking cessation journey while pregnant.

Above:
Fig 11: Natasha Willison.

Natasha Willison

Natasha Willison (Ngāti Maniapoto, Ngāti Rarua, Ngāti Toa, Ngāi Tahu) is co-founder and director of life coaching company Cultivate Tribe Limited. Through using kaupapa Māori principles, Natasha provides coaching assistance to individuals and businesses to reprogramme how they design their life and business. Within the Digi-Wā, Natasha shared how life coaching has transformed her life. Natasha also shared her model of practice called AHU and how the māmā can use it to create their own positive and desired change.

Patrick Salmon

Patrick is the founder and managing director of KaiRua. He has experience working with Quitline, Radio Tainui, Kōhao Health as the Home Base Support Service Manager, as an AKP coach, and he has worked at the NZ Aids Foundation and other community organisations. Patrick composed all the Digi-Wā.

Top Right:
Fig 12: Patrick Salmon discussing a person's rūnanga.

2.6 The Hautaka (Journal)

In the Heru & Hapū Māmā resource kete (sent to māmā by contactless courier delivery), māmā were supplied with a KaiRua branded hautaka and Heru & Hapū Māmā pen. The hautaka was provided for māmā to record their notes and thoughts while watching the Digi-Wā. The Digi-Wā included instructions for writing exercises. The kaikōrero and kaiako also sometimes provided oral information that the māmā may have wanted to write down. The hautaka could be used for writing exercies such as, composing an oriori.

Right:
Fig 13: KaiRua branded hautaka and Heru & Hapū Māmā pen.

2.7 The Heru & Hapū Māmā Facebook group

A private Facebook group was created to host the programme resources such as consent forms and the Digi-Wā series. Updates were published to the group. Facebook Messenger was also utilised to engage privately with māmā who had questions and did not feel confident enough to speak via video or phone. The Heru & Hapū Māmā private Facebook group was an essential component of the programme to facilitate discussion, encourage feedback, and pose and discuss any questions about the content or other supplementary topics. Additional videos and discussions were, from time to time, posted by KaiRua to the Facebook group and at times there were Heru & Hapū Māmā-related posts in the KaiRua public Facebook page.

2.8 Incentives

Incentives have been shown to enhance participation in smoking cessation programmes, thereby leading to an increase in the number of quit attempts (Cahill et all., 2015). Focusing on pregnant smokers, Lumley *et al.*, (2009) found that the most effective cessation interventions used financial incentives. In past programmes, this has mostly taken the form of gifts of money or food vouchers.

The primary incentive in Heru & Hapū Māmā was the gift of the heru. Other incentives included the Digi-Wā, programme materials, as well as programme-branded merchandise (e.g. a carry bag, ear buds and a long-sleeved t-shirt). These were used to facilitate a sense of belonging to the programme, which in turn, was expected to increase retention as suggested in previous research (Glover et al., 2009).

Evaluation Method

3.0 Evaluation Method

The evaluation questions were as follows:

- Was the Heru & Hapū Māmā programme attractive to pregnant Māori women who smoke?
  - To answer this, we looked at the response to recruitment advertising; how many women enrolled and if they were the intended audience.
  - The perspectives of participating māmā were collected during the programme, by survey, and a small number of māmā were interviewed after the programme for more in-depth feedback.
  - A small number of key stakeholders were also interviewed after the programme had been delivered.

- Does the Heru & Hapū Māmā programme have potential to help pregnant Māori women who smoke to reduce or stop smoking?
  - To answer this, we looked at programme and evaluation survey data on smoking status, self-efficacy and cessation behaviour across the program.

3.1 Measures

The evaluation employed a kaupapa Māori methodology using mixed methods. Due to lockdown, the data to be collected via participant observation and face-to-face interviews had to be collected remotely. Final data collection methods included self-complete online questionnaires, content analysis of programme documentation and online participant observation.

Baseline questions (Appendix B) collected data on:

- Demographic characteristics of the māmā
- Smoking history
- Pregnancy history
- Quitting support during this pregnancy, and
- Prior knowledge and understanding of relevant mātauranga Māori.

The original programme and evaluation design intended that enrolling participants would complete an exhaled carbon monoxide test to biochemically validate their smoking status. Due to lockdown and the move to online delivery, participants' smoking status was determined via self-reporting.

Participant observation data was gathered from online posts and other online communications with participants within the programme Facebook group. At the same time, both KaiRua and the evaluator were available to participants if required via Facebook Messenger, email, and by text/phone call.

3.2 Ethics

Ethics approval was obtained from Te Wānanga o Aotearoa (a NZ Indigenous tertiary education provider) ethics committee.

3.3 Recruitment

The Heru & Hapū Māmā programme trial was initially to be conducted in the Whakatane and Hamilton areas. However, the COVID-19 outbreak curtailed face-to-face delivery of the programme. After adapting it to be delivered online, recruitment was extended nationally. Women who had registered for the original face-to-face programme were invited to re-register.

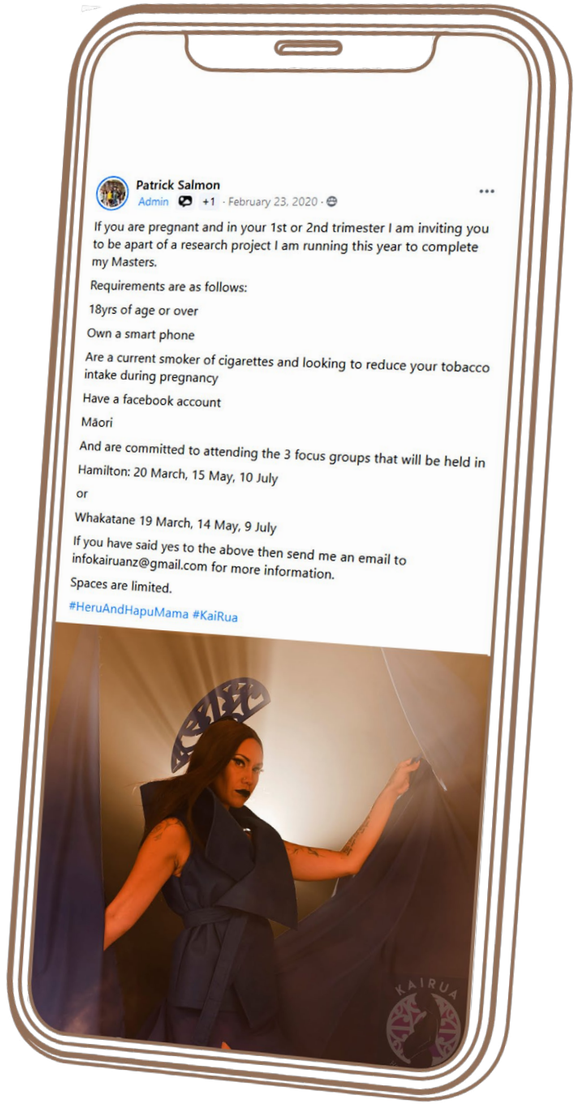
Recruitment pānui (advertisements) (see Figure 14) were designed to attract pregnant wāhine Māori who were in their 1st or 2nd trimester who smoked but wanted to reduce or stop smoking for their pregnancy. These were posted on the existing KaiRua social media platform. Māori and maternal health (hauora) and other hauora organisations were informed of the trial in person, by phone or by email. Information was also posted to the KaiRua platform informing the online followers about the upcoming Heru & Hapū Māmā programme. This was done on several occasions to allow those interested to register.

A recruitment video introducing the Heru & Hapū Māmā programme and giving a brief overview of the Heru & Hapū Māmā pack contents was posted on the KaiRua Facebook page on the 22nd of March 2020. A survey link was posted to the KaiRua Facebook page at the same time to enable those viewing to share their thoughts on the content.

An interview with KaiRua about the Heru & Hapū Māmā programme was published in a Hamilton City regional newspaper. This would have helped to inform potential participants who were either not a member of the KaiRua Facebook group or were not a part of the Facebook platform itself.

A snowball method of recruitment was also employed. Viewers were encouraged to share the pānui with possible participants they knew of. When interested women made contact, they were encouraged to forward Heru & Hapū Māmā programme information to any pregnant mothers that they knew, especially within their whānau (family). For interested people, KaiRua made allowances for the recruitment posts to be shared outside of the KaiRua Facebook page and on to individuals' personal pages.

Recruitment took place between February 2020 and May 2020.



Left:
Fig 14: Heru & Hapū Māmā pānui.

3.3.1 Screening and enrolment

Māmā registered interest in the Heru & Hapū Māmā programme by either emailing their contact information, their smoking status and stage of pregnancy, and their ability to fully commit to the program to KaiRua on the advertised email address, or by direct message via the KaiRua Facebook page.

KaiRua identified women who met the recruitment criteria. Eligible applicants, were sent a participant-information letter. It outlined the details of the evaluation and the specific focus of the evaluator role in the programme, and included a consent form (Appendix A) to complete and return. The māmā were encouraged to ask KaiRua or the evaluator any questions before consenting to the study. Māmā who consented were provided with a link to a survey on the SurveyMonkey website where they filled in the registration (baseline) questionnaire (see Figure 15). SurveyMonkey was chosen as it enabled the creation of tailor-made surveys for each Digi-Wā and all data collected was available in real time.

Māmā were then enrolled and added to the Heru & Hapū Māmā Facebook group and sent a text message to confirm both their phone number and address for receiving the Heru & Hapū Māmā programme and evaluation materials.

Above:
Fig 15: Screenshot of the Registration Survey on the SurveyMonkey website.

3.4 Programme Timeline & Schedule of Evaluation Tasks

The Heru & Hapū Māmā feasibility trial commenced on the 4th of March 2020 and ended on the 13th of August 2020.

After Digi-Wā had been published, a link to a Digi-Wā survey was promoted on the Heru & Hapū Māmā Facebook group (for example, see Figure 17). The links to each of the surveys were posted on May 14th, July 23rd, and August 13th, 2020 (see Figure 16).

23rd Feb 2020

Recruitment ad posted to KaiRua

Feb - May 2020

Māmā recruitment by KaiRua

26th Apr 2020

Māmā invited to Facebook Group

29th Apr 2020

KaiRua resource packs sent out

14th May 2020

Digi-Wā 1

14th May 2020

Digi-Wā 1 Survey

14th Jun 2020

Digi-Wā 2

23rd Jun 2020

Digi-Wā 2 Survey

2nd Aug 2020

Digi-Wā 3

13th Aug 2020

Digi-Wā 3 Survey

Above:
Fig 16: Programme timeline

Results

Left:
Fig 17: Sample of Digi-Wā survey post.

4.0 Results

This section reports on the results of the Heru and Hapū Māmā Programme trial. The following evaluation questions will be addressed:

- Was the Heru & Hapū Māmā programme attractive to pregnant Māori women who smoke?
    - To answer this, we looked at the response to recruitment advertising; how many women enrolled and if they were the intended audience?

- Does the Heru & Hapū Māmā programme have potential to help pregnant Māori women who smoke reduce or stop smoking?
    - To answer this, we looked at programme and evaluation survey data on smoking status across the program.

4.1 Recruitment & Retention

The high level of interest shown during recruitment indicated that the programme was highly attractive. At the time of the launch there were 543 unique responses to the recruitment content. It took under two weeks to enrol the required 25 eligible participants. Approximately 30 other potential participants were turned away.

Following the close of registration, one participant immediately withdrew for personal reasons. Two of the participants that had been part of the initial intake and part of the re-registration process were in their third trimester of pregnancy. Although they no longer met the eligibility criteria, they were invited to continue to participate in the programme.

For the enrolled māmā, the most frequently mentioned reasons for joining the programme were to stop smoking (n=17), learn more about Māori culture (n=11) and to gain knowledge (n=8).

Of the 24 women who continued in the programme, 1 woman did not complete any of the follow-up surveys. Among the remaining 23, 21 women completed the survey after Digi-Wā 1, and 20 māmā completed the surveys after Digi-Wā 2 and Digi-Wā 3. It was not always the same women that did not do the survey. Two of the women miscarried and did not consistently complete the follow-up surveys as the questions were not as relevant to them. One of the women stayed involved in the Heru & Hapū Māmā Facebook page – sharing the experience of her miscarriage. She continued to engage on other posts and gave feedback in the final survey. The four remaining participants who stopped engaging with the surveys were noted to have viewed the final Digi-Wā and therefore had access to all the provided content.

4.2 Māmā demographics

Most māmā were between the ages of 25 and 30 years of age. Almost all of the māmā were in a committed relationship (N=20). Most (N= 21) had other children, so this was not their first pregnancy at the time of the study. At the time of registration, 10 were in their 1st trimester, 12 were in their second trimester and 2 were in their third trimester (see Table 3). Of the 24 participants, 3 were first time mothers.

Other demographic information is summarised in Table 3. At the time of registration just over half (N=13) of the māmā were engaged in some type of part time or full-time employment. Half the māmā had a community service card.

Table 2: Māmā Demographics (n=24)

HIGHEST LEVEL OF EDUCATION	n	%
Less than high school certificate	8	33
High school certificate	6	25
University entrance	5	21
University degree	4	17
Other	1	4

EMPLOYMENT STATUS	n	%
Part-time work	3	12.5
Full-time employment	10	42
Unemployed/Receiving financial assistance	11	46

COMMUNITY SERVICE CARD	n	%
Yes	12	50
No	12	50

RELATIONSHIP STATUS	n	%
Single, never married	3	12.5
In a domestic partnership or civil union	11	46
Married	5	21
Separated	1	4
Single but cohabiting with a significant other	4	17

SIZE OF HOUSEHOLD	n	%
1	0	0
2	0	0
3	7	29
4	6	25
5	3	12.5
6+	8	33

FIRST PREGNANCY	n	%
Yes	3	12.5
No	21	87.5

STAGE OF PREGNANCY	n	%
First trimester (1-12 weeks)	10	42
Second trimester (13-28 weeks)	12	50
Third trimester (29-40 weeks)	2	8

4.3 Prior Knowledge & Understanding of Mātauranga Māori

As a Māori worldview was central to the programme, it was considered important to find out what prior knowledge māmā had of mātauranga Māori. This was assessed by asking respondents to identify their tribal affiliations, if known; proficiency in te reo Māori (Māori language), and their previous participation, if any, in any traditional Māori practices.

Regarding tribal affiliations, 21 of the 24 māmā were able to name their affiliations. Three māmā did not answer the question. Other results are summarised in Table 3. Over half of the māmā responded that they only knew a few words or phrases in te reo Māori. Four māmā were either able to have a basic conversation or converse about everyday things in te reo Māori and 3 māmā were able to have a conversation in te reo Māori across all areas. This suggests that the programme could not be delivered solely or even mostly in te reo Māori, however basic words could be used when needed.

Most māmā stated that they had not experienced or had not been involved with any traditional Māori practices utilising rongoā /Indigenous medicine, karakia/ meditation, Māori musical instruments, and neither had they been involved with a local marae, sub-tribe or Iwi (tribe).

Eighteen of the māmā stated that they had no knowledge of the heru, other than that it was a Māori hair comb. For this reason, content for the programme needed to have a full explanation about the heru, including reasons behind the design and its cultural significance for pregnancy and childbirth.

Table 3: Knowledge of te reo me te mātauranga Māori (n=24)

	BASELINE	
FREQUENCY IN TE REO MĀORI	n	%
Know a few words or phrases	14	58
Able to have a basic conversation	3	12.5
Able to have a conversation about everyday things	1	4
Able to have a conversation across all aspects of things (e.g., at home/ work/ marae)	3	12.5
Missing	3	12.5

HAVE BEEN INVOLVED IN MĀTAURANGA MĀORI PRACTICES (COULD ANSWER MORE THAN 1)	n	%
Rongoa/Indigenous Medicine	3	12.5
Karakia/Meditation	5	21
Involved with local Marae	4	17
Player of Māori musical instruments	0	0
Other	4	17
None of the above	13	54

CURRENT KNOWLEDGE OF HERU	n	%
I do not know much beyond that a heru is a Māori hair comb	18	75
I know a little bit about the traditional significance of the heru	3	12.5
I know quite a lot about heru	0	0
Missing	3	12.5

"Knowledge" was the highlight for most of the māmā, both at Digi-Wā 1 (n=14/20) and Digi-Wā 3 (n=13/20) evaluation surveys. "Loved it" was also a common reaction to Digi-Wā 3.

Further feedback from some of the māmā during the programme was that being part of a Māori-based programme was important.

> *I think the Digi-Wā was a great experience for us Māori hapū māmā and it was more than I had expected.*

> *I am connected to something bigger than myself. I'm not alone, even though I used to feel that I was. It's good to see that there are people out there that care about me and that I can be that caring force for my growing baby. The program changed my thinking and how I was looking at things. Māori knowledge is powerful and life-changing.*

For many of the women, especially those who were pregnant for the first time, the programme helped them expand on the remarkable feelings they had about being pregnant.

> *I always knew being pregnant was an amazing thing but just the first Digi-Wā has opened my eyes to how amazing this is.*

Some māmā wanted more in-depth teachings, especially on kaupapa Māori birthing and child-rearing approaches.

4.4 Smoking History and Status

Most (n=23) of the māmā first tried a cigarette when they were under the age of 18. Sixty percent of the māmā began regular daily smoking under the age of 18, 20% were between the ages of 18-24 years of age and 12% were between the ages of 25-34. Smoking history results are summarised in Table 4.

At the time their pregnancy was confirmed, 13 of the 24 māmā believed they were smoking more than 10 cigarettes a day. Four of these māmā were smoking more than 21 cigarettes a day (Figure 18).

Table 4: Smoking History (n=24)

AGE FIRST TRIED A CIGARETTE	n	%
Under 18	23	96
18-24	0	0
25-34	0	0
35-44	0	0
45-54	0	0
Missing	1	4

AGE BEGAN SMOKING DAILY	n	%
Under 18	15	62.5
18-24	5	21
25-34	3	12.5
35-44	0	0
45-54	0	0
Missing	1	4

CIGARETTES PER DAY WHEN PREGNANCY CONFIRMED	n	%
None	0	0
1-5 a day	4	17
6-10 a day	4	17
11-20 a day	9	37.5
21 or more a day	4	17
I smoked every week but not every day	2	8
Missing	1	4

INTENT TO STOP SMOKING	n	%
Yes. I want to stop smoking altogether while I am pregnant	3	13
Yes. I want to stop smoking altogether and not pick it up again in future	20	83
No. I want to cut down how many smokes I have as much as I can	0	0
No. I have already cut down how much I smoke as much as I can	0	0
Missing	1	4

INTENT TO ABSTAIN LONG-TERM	n	%
Yes. I am planning to stop smoking and stay stopped	20	83
No. I am planning not to smoke just while I am pregnant	0	0
Do not know	3	13
Missing	1	4

TRIED VAPING?	n	%
Yes	13	54
No	9	38
Occasionally	1	4
Currently using	0	0
Missing	1	4

PARTNER SMOKES	n	%
Yes	10	42
No	9	37
Not applicable/Do not have a partner	4	17
Missing	1	4

NUMBER OF PEOPLE IN HOUSEHOLD WHO SMOKE	n	%
1	8	33
2	8	33
3	4	17
4	2	8
5	1	4
6+	0	0
Missing	1	4

4.4.1 Smoking at Baseline

At entry to the programme, about half the women smoked manufactured cigarettes and slightly more than half smoked roll-your-own tobacco (see Table 5). Compared to smoking at time of confirmation of pregnancy, smoking per day was reported to be less when māmā began on the programme. Only 5 (versus 13) of the māmā were still smoking more than 10 cigarettes a day. However, 1 woman didn't answer the question. Even if we assume she was in this group, most of the women who were smoking heavily when their pregnancy was confirmed had reduced their cigarettes per day by the time they started the programme. Only 3 of the māmā were not having cravings to smoke then (Table 5).

Smoking status at baseline is illustrated in Figure 18 and presented along with smoking measures across the programme in Table 6.

Table 5: Type of tobacco and cravings to smoke at baseline

TYPE OF TOBACCO	n	%
Cigarettes (Manufactured)	11	48
Tobacco (Rollies)	14	61
Homegrown	0	0
Other	1	4

CURRENT CRAVINGS TO SMOKE	n	%
Yes	12	52
No	3	13
Sometimes/ Occasionally	8	35

4.4.2 Smoking at follow-up

After receiving their Heru & Hapū Māmā resource pack, and prior to the beginning of the first Digi-Wā, there was a decrease in smoking, with 14 māmā smoking only 1-5 cigarettes a day and only 5 māmā smoking over 10 cigarettes a day. Of those 5 participants, 2 māmā were smoking 21 or more cigarettes a day. After this there was a consistent reduction in smoking.

Stopping smoking was not a linear experience for most māmā. Whilst a few māmā stopped or switched to vaping early on and continued that way, for most of the māmā reducing smoking was a down, up, down, experience, as illustrated in Figure 18. Figure 18 shows the smoking trajectory for each māmā. Where data was missing at a follow-up point, the previous smoking status was carried forward (known as an intention-to-treat way of reporting smoking status at follow-up). That is, a māmā with missing data was assumed to have stayed the same as her previous self-reported cigarettes per day amount. If women with missing data were left out, it could look like overall more māmā reduced than maybe they did.

Below:
Fig 18: Cigarettes per day per woman at baseline, Digi-Wā 1, Digi-Wā 2 and Digi-Wā 3.

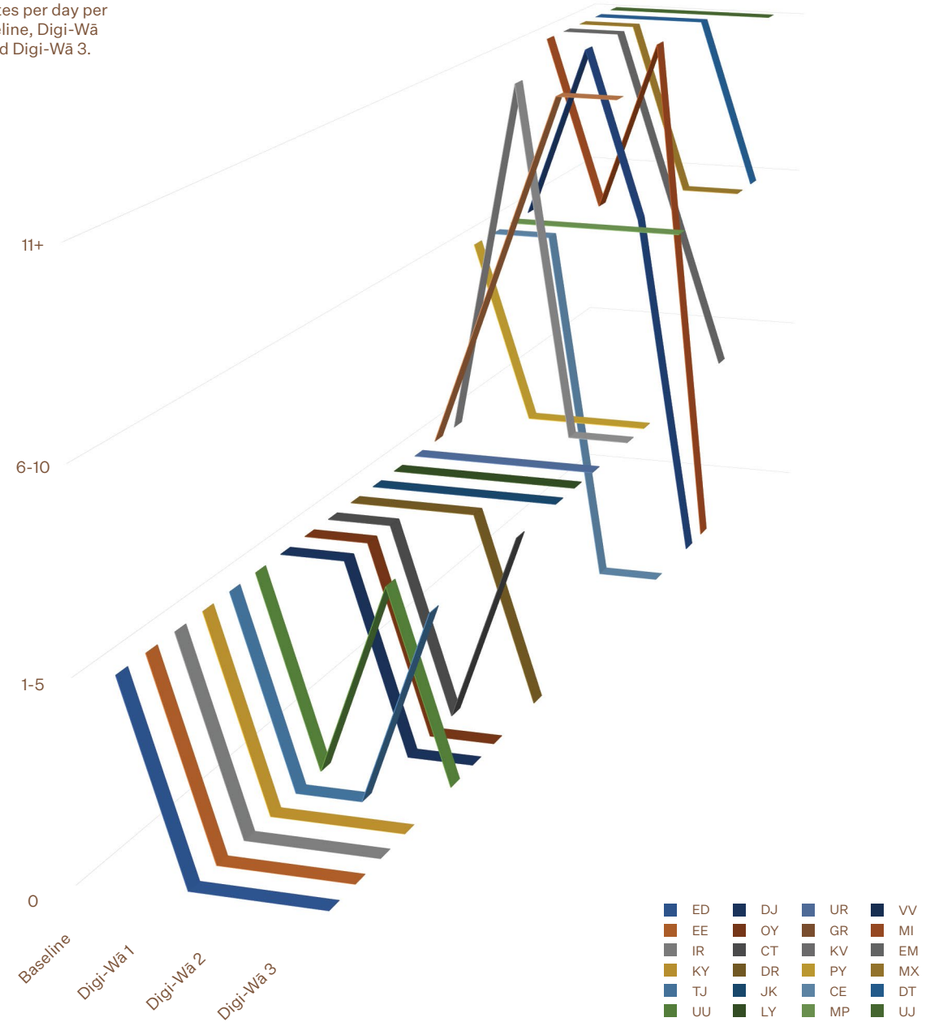


Table 6: Smoking measures across the programme

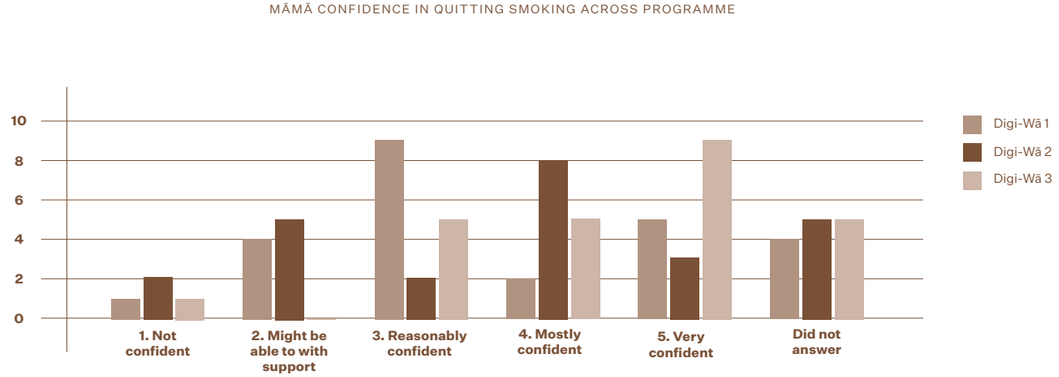
	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
SMOKING CONSUMPTION SINCE REGISTRATION	n	%	n	%	n	%	n	%
Smoking more	-	-	1	11	0	0	0	0
Smoking the same	-	-	7	39	4	12.5	3	15
Smoking less	-	-	13	50	16	81	17	85

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
CIGARETTES PER DAY	n	%	n	%	n	%	n	%
None	0	0	0	0	0	0	0	0
1-5 a day	14	61	13	55.5	6	31	7	35
6-10 a day	4	17	5	28	4	12.5	3	15
11-20 a day	3	13	3	17	3	12.5	1	5
21 or more a day	2	9	0	0	0	0	0	0
Using an alternative method	0	0	0	0	7	37.5	9	45
Missing	1	4	-	-	-	-	-	-

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
TIME TO FIRST CIGARETTE	n	%	n	%	n	%	n	%
Within 5 minutes	4	17	0	0	0	0	0	0
6-30 minutes	6	26	5	28	6	19	2	10
31-60 minutes	2	9	1	5.5	1	6	2	10
After 60mins	11	48	9	39	7	37.5	6	30
Not applicable	2	9	0	0	0	0	0	0
TIME CRAVING IS HIGHEST	n	%	n	%	n	%	n	%
First thing in the morning	-	-	3	17	2	6	3	15
Midday	-	-	2	11	4	19	2	10
In the evening	-	-	11	44	9	50	7	35
All of the above	-	-	2	11	2	12.5	0	0
None at all	-	-	3	17	3	6	8	40

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
SMOKING CONSUMPTION SINCE LOCKDOWN/ SELF-ISOLATION	n	%	n	%	n	%	n	%
Smoking more	-	-	5	28	-	-	-	-
Smoking the same	-	-	6	44	-	-	-	-
Smoking less	-	-	10	28	-	-	-	-
ACCESS TO PURCHASING TOBACCO PRODUCTS SINCE LOCKDOWN LEVEL 4 AND LEVEL 3	n	%	n	%	n	%	n	%
Yes	-	-	6	22	-	-	-	-
No	-	-	15	78	-	-	-	-
SMOKING CONSUMPTION SINCE END OF LOCKDOWN/ SELF-ISOLATION	n	%	n	%	n	%	n	%
Smoking more	-	-	-	-	2	0	-	-
Smoking the same	-	-	-	-	3	12.5	-	-
Smoking less	-	-	-	-	15	81	-	-

Figure 19 shows that participation across Digi-Wā led to an increase in confidence in the ability to quit smoking cigarettes (Table 7).



Above:
Fig 19: Māmā confidence in quitting smoking across programme.

Table 7: Self-efficacy in being able to stop smoking for remainder of pregnancy

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
SELF-EFFICACY THEY CAN STOP SMOKING FOR THE REST OF PREGNANCY	n	%	n	%	n	%	n	%
Not confident I can stop smoking at all	4	17	1	5.5	2	13	1	5
Might be able to stop with support	10	43.5	4	22	5	20	0	
Reasonably confident should be able to stop	4	17	9	39	2	7	5	25
Mostly confident can stop smoking	2	9	2	11	8	53	5	25
Will definitely stop this time	3	13	5	22	3	7	9	45
Missing	1		-	-	-	-	-	-

4.5 Methods used to stop smoking

At the time of registration, no māmā identified using other cessation aids or programmes. Some māmā reported that they had used nicotine replacement therapy methods to cut down or quit smoking and just over half the māmā stated that they had tried vaping.

Many māmā utilised alternative methods to help them not smoke (Table 8).

4.5.1 Feedback after Digi-Wā 1

The most common strategy that helped with cravings was learning new things and focusing on creative projects (n=9/20).

4.5.2 Feedback after Digi-Wā 2

At the Digi-Wā 2 evaluation most of the māmā indicated that the programme was helping them to cut down on smoking (n=17/20). Some māmā confirmed a reduction in smoking due to features of lockdown. Some participants were unable to access tobacco because they lived in rural areas where there were no stores open nearby. Other participants said they smoked less because of the lack of stress that occurred in their home due to having no visitors. One māmā however, did not feel like she would be able to continue trying to reduce and stop smoking. For her, lockdown was a cause of stress and she had had a loss of a family member during that time. Others discovered that they were more of a social smoker. Due to the lack of social company, they didn't get cravings to smoke.

4.5.3 Feedback after Digi-Wā 3

Stress was the most commonly cited trigger of cravings to smoke, then boredom, being “addicted” or “habit” and “food” were equally the next main triggers to smoke.

A range of stop-smoking aids were used by the māmā. Some māmā ticked more than one aid, indicating that they were possibly combining, for instance, nicotine patches with vaping nicotine. Their choice was influenced by advice and information given to them by their doctor, and information and support they received from the Heru & Hapū Māmā programme. Information on the range of cessation aids had been shared into the programme Facebook group to support participants to make informed decisions about how to stop smoking. Vaping appeared to be a popular aid many of the women tried.

Among māmā who had heavier smoking levels, some had gone back to smoking once they returned back to work after lockdown. One woman said she was not allowed to wear her heru in the workplace (because there was a stipulated uniform). She felt this had negatively impacted on her ability to stay off smoking. Participants like her wanted some education about heru to be delivered to workplaces so that anyone who in the process of self-healing and personal development could have the support they require within the workplace.

The Heru & Hapū Māmā programme was the main source of smoking cessation support most māmā engaged with (Table 8).

Table 8: Stop smoking methods used

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
SMOKING CONSUMPTION SINCE RECEIPT OF HERU AND RESOURCE PACK	n	%	n	%	n	%	n	%
Smoking more	-	-	1	5.5	-	-	-	-
Smoking the same	-	-	7	33	-	-	-	-
Smoking less	-	-	13	61	-	-	-	-

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
SMOKE WHILE WEARING HERU	n	%	n	%	n	%	n	%
Yes	-	-	0	0	-	-	-	-
No	-	-	21	100	-	-	-	-
METHODS TRIED/USED TO CUT DOWN OR QUIT SMOKING	n	%	n	%	n	%	n	%
Nicotine Gum	11	48	10	44.5	8	44	6	30
Nicotine Lozenges	8	35	6	22	5	31	5	25
Nicotine Patches	10	43.5	8	39	7	37	6	30
A medicine (Champix/ Zyban/Nortryptiline)	3	13	2	11	1	6	3	15
Vaping Nicotine	12	52	13	61	14	87.5	14	70
Other	4	17	5	22	4	12.5	6	30

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
INTEREST IN LEARNING ABOUT ANY OF THE FOLLOWING PRODUCTS TO STOP SMOKING	n	%	n	%	n	%	n	%
Nicotine Gum	2	8	1	5.5	1	7	0	0
Nicotine Lozenges	2	8	1	5.5	2	7	0	0
Nicotine Patches	4	17	1	5.5	1	7	0	0
A medicine (Champix/ Zyban/Nortryptiline)	4	17	3	17	4	20	1	10
Vaping Nicotine	9	39	10	55.5	7	33	4	20
Nicotine Spray	5	22	6	33	4	13	2	10
Nicotine Toothpicks	5	22	6	33	5	20	2	10
Nicotine Oral Pouches	6	26	5	28	4	12	2	10
None of the above	12	52	9	33	10	53	13	65
RECEIVED CESSATION SUPPORT FROM ANY OTHER SERVICES	n	%	n	%	n	%	n	%
Yes	-	-	4	11	4	20	4	20
No	-	-	15	78	15	80	16	80
Prefer no to say	-	-	2	11	1	0	0	0

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
KEY SUPPORT PERSON/ PEOPLE	n	%	n	%	n	%	n	%
Partner	-	-	11	56	11	60	14	70
Whānau	-	-	11	56	11	47	17	85
Flatmates	-	-	0	0	0	0	0	0
Friends	-	-	3	11	3	7	3	15
Workmates	-	-	2	11	3	13	3	10
Other	-	-	2	5.5	1	0	1	5
Cannot identify support person/people	-	-	4	17	2	0	1	5
SATISFACTION WITH LEVEL OF SUPPORT FROM OTHERS	n	%	n	%	n	%	n	%
Need more support	-	-	3	17	3	13	-	-
Have enough support	-	-	12	56	15	80	-	-
Overwhelmed by support / It's a distraction	-	-	4	17	1	7	-	-
Need an outside/neutral person to talk to	-	-	2	11	1	0	-	-

4.5.4 Programme potential for supporting abstinence from smoking

Overall, the participants were self-aware about why they smoked and what triggered them to do so. Boredom and stress were cited as key reasons for smoking. By Digi-Wā 3, those who had stopped smoking or were using some alternative method to reduce their smoking had increased by 30%. The reasons for this ranged from identifying smoking triggers, the kaupapa, which had revigorated or shown them how to stop, as well as finding some type of external purpose.

When it came to managing their cravings, most women focused on positive and or external things, such as engaging and enhancing their creativity.

> *When I feel like I want a puff, I put the heru on and get my baking on.*

> *I feel less crave for cigarettes and more crave [for] the program.*

Starting their own businesses became a more prominent dream for respondents. Most of the māmā (n=17/20) found that working on a project idea helped them with the challenge of not smoking by keeping them distracted, busy and "not bored". Of those interviewed, 65% had conceived of a potential business idea and 98% said that even conceiving such a plan had helped them gain a new focus. They believed that if they stayed the course, not only might they start something but that it might help them further reduce smoking or continue to abstain from smoking.

> *Thinking of my business idea takes my thinking away from being bored and smoking. Having something to look forward to that I can actively do, helps overcome cravings.*

For some, concentrating on the healing properties of the heru helped empower them to make positive decisions. And when they experienced cravings, they would:

> *Jump on the [Facebook] page and read through all the posts to try push through the cravings. All the positivity on the page definitely helps.*

The fact that many of the women felt they were part of the Heru & Hapū Māmā community helped them stay focused. This also extended to bringing their whānau together to support them through the programme and ultimately to quit smoking. Identifying family as part of their support increased from n=11 in Digi-Wā 2 to n=17 in Digi-Wā 3. Whilst one participant was not able to initially identify any support people at Digi-Wā 2, by Digi-Wā 3 they identified a friend as a support person, alongside their partner. This shows that the programme was able to assist in opening up options for women to tap into and find not only support inside their family but also outside.

Table 9. Post Digi-Wā use of resources

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
HERU USE	n	%	n	%	n	%	n	%
All the time	-	-	-	-	0	0	-	-
Sometimes	-	-	-	-	14	67	-	-
Only during the Digi-Wā	-	-	-	-	2	13		
During the time of craving cigarettes	-	-	-	-	2	13	-	-
Not at all	-	-	-	-	2	7	-	-
COMPLETED ORIORI	n	%	n	%	n	%	n	%
Yes	-	-	-	-	2	7	-	-
No	-	-	-	-	14	80	-	-
I would like some help with it	-	-	-	-	4	13		
Missing (did not find a blank)	-	-	-	-	1	-	-	-

	BASELINE N=24		DIGI-WĀ1 N=21		DIGI-WĀ2 N=20		DIGI-WĀ3 N=20	
APP EASE OF USE	n	%	n	%	n	%	n	%
Easy	-	-	9	44.5	13	73	-	-
Alright	-	-	8	44.5	7	27	-	-
Hard	-	-	1	5.5	0	0		
Was not able to use it	-	-	3	5.5	0	0	-	-
HELPFULNESS OF THE FACEBOOK GROUP	n	%	n	%	n	%	n	%
Extremely helpful	-	-	8	38.9	9	53	8	40
Very helpful	-	-	10	44.5	7	33	9	45
Somewhat helpful	-	-	3	16.6	4	13	3	15
Not so helpful			0	0	0	0	0	0
Not at all helpful	-	-	0	0	0	0	0	0

4.6 Use of programme resources

Table 9 summarises the use of the programme resources results.

4.6.1 Wearing the heru

At the Digi-Wā 2 evaluation, māmā shared that they felt more confidence when wearing the heru and that smoking when wearing it felt bad. As one māmā explained, wearing the heru invoked a sense of tapu that made her feel like she could overcome any challenges that might arise during her day. One māmā wrote, "I love the sense of empowerment it gives me". Some māmā believed wearing the heru supported their minds to learn, comprehend and retain the information they were learning, so they mainly wore the heru when watching the Digi-Wā. Some māmā only wanted to wear the heru when having strong cravings to smoke. For example, one woman said:

> *"I put on my heru when I'm at my highest peak of wanting a smoke. I look in the mirror and tell myself I AM WAHINE TOA, I DONT NEED A SMOKE."*

Other explanations for why māmā didn't wear the heru more often, included that

it was difficult to wear, of they felt “too lazy” to wear it. The single māmā who never wore her heru said, “I’m worried that I will break it”.

At the Digi-Wā 3 evaluation, more than 70% of the participants were wearing their heru or using it both as an accessory and or stress reliever, or to distract them from smoking.

> *I wear it to special events and when I am needing extra encouragement in anything that I am battling with, a tinana, hinengaro and whatumanawa.*

> *I usually put heru on when I feel most at ease or when I feel like being creative or when writing.*

From the beginning of the programme, māmā replied with an overwhelming ‘no’ when asked if they ever smoked while wearing their heru. The heru was understood to be tapu, a taonga; therefore wearing it whilst smoking was understood to be disrespectful. As one woman said:

> *My mother would kill me. She’s absolutely against wearing taonga that has deep association to kauwae runga around smokes, drugs, alcohol. I’d never hear the end of it.*

Overall, the respect for the heru, the support, and the positivity that women experienced showed that the Heru & Hapū Māmā programme was inspiring for all involved.

4.6.2 Oriori

For some women, reading through their oriori helped them gain valuable insights and or reminded them of their kaupapa. This helped refocus them and gave them strength to get through difficult and trying situations, especially through bouts of cravings.

4.6.3 Facebook

At the Digi-Wā 2 evaluation, māmā were still finding that the Facebook group was useful for receiving quick updates and for connecting with, providing and receiving support from the other participants. Traditional birthing methods and home birthing was one topic several participants engaged with.

The “community support” and feeling like they were part of “something bigger than oneself” were the most common reasons the māmā gave at the Digi-Wā 3 for why the programme was helping them to cut down on smoking.

4.6.4 Digi-Wā 1

All of the māmā said the Digi-Wā was far better than what they expected.

> *Was not at all what I was expecting. First thought, “AMAZING”. Love how things were explained and the vibe it gave me.*

> *Yes. It’s delivery and (after reading more about what the programme is focused on) its content was also what I expected. When I first received my taonga, I was confused by the fact that there were no resources that related to smoking. After reading everything properly I realised that this programme focuses on reducing smoking by reinstating traditional practices.*

Overall, the participants felt that they had already gained a lot of knowledge and understanding from the first Digi-Wā and they were excited to learn more.

4.6.5 Digi-Wā 2

One quote from a māmā illustrates well the overall feeling about Digi-Wā 2: *“It has exceeded my expectations”*. More specifically, māmā loved what they were learning.

So cool. [The] content was/is informative; love hearing about the old ways and always learn something new.

It was amazing! Learning so many things along this journey that can benefit me being a hapū māmā.

The talk by Hinewirangi about pūrākau (myths) and miscarriage, and preparing for or dealing with loss, was of interest to those who had never experienced the loss of a baby. It was particularly appreciated by the māmā who had lost a child in the past.

I hadn't thought about what I would do if my baby never reached Te Ao Mārama and I thank Hinewirangi for sharing what she did.

I don't like to choose a favourite part as everything is so amazing to me.

After Digi-Wā 2, women were beginning to see more possibilities for themselves. Many commented that the programme was continuing to go beyond their expectations. Whilst one woman said that she was still struggling to cut down or quit smoking, she wrote that she had her fingers crossed that she would achieve her goal by the end of the programme.

The women expressed beliefs that showed they thought the trainers, such as Patrick and the Māori practitioners, were there for them. They saw them as being truly supportive and caring and for this reason, participants wanted to give 100% in return.

The amount of love and passion that gets put into this Heru & Hapū Māmā journey, if people are putting in so much time and effort to help us quit smoking, is making me want to stop even more.

4.6.6 Digi-Wā 3

By Digi-Wā 3, one respondent felt such an increase in confidence that she reported she had begun to talk with her cousin about starting a business.

Excitement! My cousin and I are currently throwing ideas around to start a business and have it up and running once I go on maternity [leave], and this was packed with great advice.

Another woman said that this Digi-Wā:

Gave me lots of ideas and tautoko on an idea that I've had for a while but didn't know how to pursue it.

By the end of Digi-Wā 3, women felt informed, motivated and connected to one or more supportive people. They had also identified positive shifts in their lives. Some women said that 'without a doubt' they would encourage other hapū māmā to give the Heru & Hapū Māmā programme a chance. One woman said she was also going to tell her midwife about the programme.

4.7 Analysis of Facebook posts

Outside of the KaiRua based discussions, māmā shared their experiences of becoming an expectant māmā and stopping smoking. For example, one māmā posted to the group that she had excess nappies and gifted them on to the other māmā. Another māmā, shared her birthing story to the group as seen through the eyes of her midwife. Further still, some māmā went on to create their own 'mothers group chat' away from the Heru & Hapū Māmā Facebook page to chat privately about their experiences. A majority of māmā were members of the KaiRua Facebook page. However, they didn't post on that page in regard to their experiences with the Heru & Hapū Māmā programme.

Māmā & Stakeholder Perspectives

5.0 Māmā & Stakeholder Perspectives

Qualitative interviews, using a semi-structured interview schedule, were conducted with 5 of the participating māmā and five key stakeholders to determine the acceptability of the programme.

Māmā and key stakeholders were encouraged to ask any questions about the interview process and they were told that they had the option to withdraw at any time. Interviews were conducted via recorded Zoom or phone calls. One māmā requested that her interview be conducted via Facebook Messenger as she felt too whakamā (shy) to talk directly.

Data from the māmā interviews focused on their:

- smoking status throughout the programme,
- status of pregnancy,
- perceived acceptability and suitability of the programme; and
- potential improvements that could be made to the programme.

The five key stakeholders were asked about:

- other programmes with Kaupapa Māori content and a similar cessation purpose,
- potential efficacy of the Heru & Hapū Māmā programme,
- the use of the heru and its inclusion with an AR experience, and
- the potential for the programme to be implemented across the country across various sectors (including, by midwives, in hapū māmā wānanga, health centres, and by DHBs).

5.1 Feedback from the māmā

All 5 māmā attempted to stop smoking over the course of the programme. Of the 5 māmā interviewed, 1 completely stopped smoking cigarettes. (A total of 4 women from the 24 participants stopped smoking, 1 of them a few months after the programme finished.) The other four women reduced their cigarette intake, however their smoking rates increased towards the end of the programme. Stress at home was the reason for the increase in smoking.

All māmā reported that they had someone supporting them during the programme, however, their support person did not stop smoking alongside them. Whilst this was not a priority for participation in the programme, research does show that if someone is still smoking in the house then it is harder to stop smoking and relapse is more likely. However, most of the participants reported that once their baby had been born, they had agreements with friends and family to not smoke anywhere near their newborn.

5.1.1 Māmā feedback on the Digi-Wā content

Overall, the participants found the Digi-Wā extremely helpful.

> *[Each]...Digi Wā were actually trying to get to the deeper issue of why you're smoking. Yeah, getting into the wairua stuff as well. I feel like I'm, I'm more connected and knowledgeable... it made me like wanna research about it and go and ask my kaumātua about it as well.*

> *I mentally prepared myself to be in a lecture-style wānanga situation. But was very pleased how learner and listener-friendly it was. Definitely took away that pressure of feeling I'd be back in school.*

> *Its more self-paced, which is good.*

Several māmā discussed having trouble either installing the Heru & Hapū Māmā App onto their device, or once they had done so, having difficulty getting it to recognise either the heru/heru box or KaiRua logo on merchandise. It should be noted that the App must recognise the logo on either the heru itself, heru box, merchandise with the KaiRua logo on it, or a printed KaiRua logo for the application to function.

When asked about other content they would like to see in future Digi-Wā, māmā commented:

> *I would have loved to see more recipes from Hera, she has a great way of engaging her audience and has recipes that are budget-friendly.*

> *Trying to figure out how I could incorporate the traditional practices Whaea Hinewirangi talked about, such as the use of pūtatara/pūmoana when baby is born, or a kaikaranga as we don't have one in my immediate whānau.*

5.1.2 Māmā feedback: Digi-Wā 1

Though the first Digi-Wā was not what most māmā expected, they said the content was useful and that they picked up a lot of information they hadn't thought about.

> *This Digi-Wā was good for me. It's helped with my breathing but also personal experience of a previous miscarriage that I had years ago.*

> *When I was hapū with baby, I used that Digi Wā and I made him a oriori and I would sing it to him when I was hapū. And then now I sing it to him and it's like one of his favourite songs. I remember her saying to add in where he's from and his different Iwi and I had only really installed my side. So, then it made me ask my partner where he was from and, so yeah, we ended up finding out baby's other half of his whakapapa. So yeah, that was a cool journey as well.*

5.1.3 Māmā feedback: Digi-Wā 2

Two of the māmā commented that they did not like the discussion around miscarriage as they had previously experienced it and it brought up thoughts and feelings of regret and loss. It also prompted māmā who had not experienced this loss, to think about what they would do if they were to be confronted with it.

> *I enjoyed something from each of the kōrero. Hinewirangi - I hadn't thought about what I would do if my baby never reached Te Ao Mārama. I am a planner, so it made me think about what I would do were we ever in that position.*

The incorporation of stretches into the Digi-Wā was well received by the māmā, with all of them commenting that they were incredibly helpful.

> *Nina's stretches - I've had the worst time taking time out to relax and breathe as I'm on the go constantly and my pelvic floor kills me for it, so it was awesome to learn a few stretches that didn't take long to incorporate in my day.*

5.1.4 Māmā feedback: Digi-Wā 3

Digi-Wā 3 was not what the māmā expected either.

> *No. But it helped me to realise I am capable of bigger things. I haven't thought of a business idea, but for so long I wanted to be a corrections officer, but I was always looking at the big bit being the officer and not breaking it down. Now I've thought of the steps I need to take and already researched how to get into that line of work and it's very easy, but because I was only focused on the bigger picture it seemed harder than what it actually is.*

> *It was more than expected. I had a 'lil tangi [cry] because it just reaffirmed who I am and my potential.*

One māmā talked about how the third Digi-Wā had helped her cut back on smoking.

> *Able to cut back on my smoking by heaps and feeling super proud of how less I feel for smokes. Having been given great resources and videos to help with my goals and process into giving up smoking.*

Māmā varied in their opinion on the ideal length of the videos and some said they still preferred face-to-face wānanga.

> *Ko te roa ki te mātaki. He pai kē ki a au te kōrero a kānohi [It was long to watch, I prefer to speak face-to-face].*

> *It was quite short, and I find not being able to converse face-to-face (like a normal wānanga) a little restricting... I enjoy different perspectives and bouncing ideas etc.*

That the Heru & Hapū Māmā programme was created by Māori for Māori was seen to be central to māmā in feeling supported, in contrast to mainstream quit programmes. Some māmā credited that aspect with them feeling inspired by the programme. For example, one māmā said:

> *We've got one here in Hawkes Bay... [a] campaign - if you're pregnant you can go and sign up. But it's yeah, got that Pākehā mentality – doesn't really make you wanna do it. Yeah, like it ticked the box.*

5.1.5 Final Interview with Hapū Māmā

Overall, the māmā found the programme was beneficial for them, and they loved wearing their heru.

> *You got like a little reward [the heru], like that was quite cool.*

The Heru & Hapū Māmā programme was understood by many of the participants to be a resource that would motivate as well as support them to feel that they belonged.

> *Something bigger than myself and I've learnt that I come from great tīpuna.*

Even for the woman who had experienced a miscarriage, she anticipated that if or when she was to become hapū again, she would want to access the programme again.

5.2 Key stakeholder perspectives

All five key stakeholders strongly agreed that using Kaupapa Māori based incentives to motivate pregnant women to stop smoking is a good idea. They were all very supportive of the programme.

> *Amazing. Absolutely amazing... it's just timely. We've been searching in the stop-smoking world for something that is really entrenched in tikanga Māori and I think Patrick has really done that.*

> *When I first saw it, I thought faaar, this is out the gate.*

> *I would use this programme tenfold over what the Government is*

supplying us with right now.

Key stakeholders who had worked in other cessation programmes said the programmes did not necessarily work for Māori women.

> *Quitline – it's not working... I've been working in this game for [many] years, and it has never changed. 'Oh, I smoke' – here's some patches, here's some gum, here's some lozenges, here's an 0800 number. 'See you later'. Like, it just does not work. And then someone, a quit coach, will come over to your house and breath-test you and tell you how naughty you are for smoking. And then off they go again. It's… it just is ridiculous and such a waste of taxpayers' money.*

Another key stakeholder argued that supporting cessation does not always have to be focused on someone's actual smoking.

> *Programmes that I've currently been involved in over the last three years don't really meet the needs of people... what I mean by that is, when I go in and do a programme... smoking is probably the last thing I talk about. There's all these other things going on.*

Common stop-smoking approaches, one respondent suggested, used scare tactics to stop people smoking. They believed this did not support women to quit long-term.

> *So, we've gone through this period of trying to frighten people into stopping smoking by showing them all the terrible, you know, the pictures and all that. And that, without a doubt, has an immediate effect, like everyone goes, 'God no.' But it's momentary.*

Aspects of the Heru & Hapū Māmā programme that the key stakeholders felt worked well included the actual wearing of the heru. One respondent compared wearing the heru to wearing kākahu at kapa haka.

> *We went away for Kapa Haka... and we were wearing our kākahu to perform in, and although we did smoke, we would never smoke in our kākahu, there's just that mana sort of enhancing space.... wearing the heru is really mana enhancing.*

> *When you see that [heru], if you receive that you feel like, wow, someone's given me this special tāonga. Even if you don't know [or] understand what a heru is, you know that it's something special... a mean sort of a connecter from the start of something beautiful to come out of.*

> *When I saw this amazing heru – that I had never seen anything like it in my life – it just, just blew me away.*

For most of the stakeholders, the Digi-Wā offered more than just information, they were an essential aspect of the women's pregnancy journey.

> *What could be added is more – more education around, like, the anatomy and physiological effect of smoking on the unborn baby. Like what is happening to your baby every time you have a cigarette.*

> *Digi-Wā 1 Hinewirangi says some beautiful things and that resonates with whānau. I remember getting some feedback from someone who said, "That lady said something about my whakapapa. And you know, I realised that that's linked to smoking." Profound! Just one sentence and they remembered it, held on to that, started their quit journey.*

Some stakeholders voiced some concerns for the future of the programme, that it could be compromised if it became part of non-Māori-controlled cessation services.

> *Maybe collaborate with some non-Māori… as long as someone's [a] kaitiaki [for it]… It'll be scooped up. I definitely think they'd love it… would they care for it the same way we would?*

The main suggested ways to improve the Heru & Hapū Māmā programme were to adapt it for local areas.

> *Should be shaped to the rohe... oriori and the karakia and all those should be depicted to those regions.*

> *Definitely think you need to look at the scope and your demographics about where you are and what beauty lies within that, that rohe.*

Some key stakeholders discussed extending the programme.

> *It could be like an 8-week programme… then having a 6- or a 12-month follow-up would be really great to actually see what is the tobacco consumption or the status of that whānau or that wāhine.*

Another suggestion was the possibility of involving whānau and potentially extending it to:

> *…whoever comes into that whare… putting something around that whare to make that whare a tapu space which is going to be, you know, tupeka kore.*

Whilst it was understood that the reason that the programme had to go online was due to the COVID-19 pandemic lockdown, there was some discussion about face-to-face compared to online options. In some circumstances it was believed that for some mothers online could be preferable.

> *A few of these Mum's as well, have anxiety and depression… coming into big groups of people is something that they never want to do… the online option… is great for them. But face-to-face is always, is always a great option, especially for Māori.*

For some stakeholders, COVID-19 was an opportunity to explore the potential of online support.

> *I think COVID is a stepping stone in that direction as well… we're all, even kaumātua, kuia, on Zoom and zui and hui… having the heru as a taonga and also having the technology I think is great balance.*

> *When we come out of [the pandemic] there'll be a long transition and programmes like this lay some good foundations… Get us into [a] different zone, you know, the taha wairua side of it.*

The stakeholders also suggested that DHB-based programmes needed to look more into having a Kaupapa Māori based approach as their current programmes were too generic and participants had a hard time relating to the content.

> *'cause they're (DHB) pouring a lot of money into programmes that aren't working.*

> *…from the programme – one of the things I've seen come out: I went to his [Pat's] launch and you know mums – as soon as they're in a space they start to open up. And we had a lot of mums say, this is exactly what I need for my mental health… there's just so many mums that are talking like that.*

When discussing non-Māori-controlled stop-smoking programmes that claim to draw on Kaupapa Māori, many of the stakeholders had reservations about the way Māori were portrayed.

> *Nothing – just using Māori to portray the messaging. Nothing Kaupapa Māori at all though, still mainstream as… still very Ministry-driven and it's not working I can tell you that right now.*

> *The current stop-smoking tohu [focus] a lot around addiction, "What medications are you using?" So, trying to get my head from that to what he's [Pat's] providing has been really challenging. But fantastic.*

Some of the stakeholders couldn't wait to use, or refer to other women to, the Heru & Hapū Māmā programme.

> *There needs to be options for whānau, and it doesn't have to actually just be cessation.*

> *Some of the māmā's that have come, you know, come out the other end and it works. I would use this programme tenfold over what the Government is supplying us with right now.*

> *I think it's a great concept… that programme enables whānau to sorta get out of the space, but actually be thinking about the space… I definitely think there is a need for this type of programme. Everything else is quite generic.*

The wearing of the heru was understood to be significant and enhancing, similar

to effects other taonga can have for Māori.

> *Heru have always had a significance for me in that I love them, and I have always seen them as a, as a beautiful adornment. Not just for women but also for men too… And so that idea of protecting the brain and its significance – significance in your head for Māori being tapu – all those kinds of stories.*

Some of the success of the Heru & Hapū māmā programme was put down to the "Pat factor" and as one key stakeholder suggested:

> *Pat's really good at creating a space that cares for people… Patrick's heart for doing it, and his intentions, they're so true and honourable and good. And goodness, you know, it's really hard to find goodness sometimes… Whereas I think with Patrick's model, what's so wonderful is that it's whānau-centred. Everything is about the whānau and how you work with them.*

Conclusion

6.0 Conclusion

This evaluation set out to assess if:

- the Heru & Hapū Māmā programme would be acceptable to pregnant Māori women who smoke, and

- if the Heru & Hapū Māmā programme might have the potential to help pregnant Māori women who smoke to reduce or stop smoking.

6.1 Acceptability of Heru & Hapū Māmā programme

Interest in the programme from wāhine Māori who were pregnant was encouraging. Recruitment of the aimed-for 25 māmā occurred quickly and there were other women who missed out. Most of the women met the inclusion criteria. A few women were into the 3rd trimester of their pregnancy, but they had expressed interest earlier and would have been part of the initial pre-COVID programme if that had gone ahead. We conclude that the programme is likely to be highly attractive to pregnant Māori women who smoke.

Being able to enrol hapū wāhine into an antenatal programme aimed at assisting abstinence from smoking is good, but such programmes need to be able to keep participants engaged. Most of the enrolled hapū māmā stayed engaged throughout the entire programme. The feedback throughout the programme and in interviews afterwards found that most of the māmā enjoyed participating in the Heru & Hapū Māmā programme.

The feasibility study enabled the trial of a range of programme components, such as the use and acceptability of wearing a heru to support hapū wāhine Māori to abstain from smoking. Some innovative digital-delivery methods and resources were also trialled, such as using AR technology within a mobile app learning resource.

6.1.1 The acceptability of using the heru

The gift of a heru, a traditional Māori taonga, was a key behavioural change component of the Heru & Hapū Māmā programme. The heru evoked a range of emotions, a sense of connection to past knowledge and status, and connection to the future baby that the māmā were preparing to bring into the world. For some women it facilitated a sense of calm and focus. But, the heru was a practical resource also that could be used to trigger the KaiRua App and discussions with whānau. It could be worn simply to uplift but was also a symbol of commitment to being hapū and to their pēpi. Wearing the heru was also a signal to others, a reminder of the tapu (sacred and important) state of being pregnant. Combined

with the knowledge conveyed in the KaiRua App that was linked to shapes in the heru, and the knowledge conveyed in the Digi-Wā that women could watch while wearing it, the heru became a mnemonic – a reminder of the teachings.

The shapes carved into the heru, the KaiRua logo, repeated across programme materials and merchandise, extended the reach of the mnemonic. That is, the branding as such had a higher chance of being seen and thus a higher chance of 'reminding' māmā of the programme and of their goals. Merchandise also assists with creating a sense of belonging to the programme and the group the māmā were collaborating in. This also likely facilitated retention in the programme and evaluation.

Future programmes could extend the accessibility of the heru by providing some information participants can pass on to employers. Some participants who met with resistance to their wearing their heru at work wanted more education around heru for workplaces to facilitate acceptance of traditional healing methods, and support for staff who choose to use heru.

A consistently mentioned 'value' or offering of the Heru & Hapū Māmā programme was that it would, and did, increase participants' knowledge of Māori culture, particularly pertaining to pregnancy, birthing and post-natal support. This finding is consistent with results from a previous study with pregnant wāhine Māori about what a stop-smoking programme should contain in order to interest them in it. Participants in Roberts et al., (2017) "expressed a strong interest for the programme to incorporate a focus on being Māori, Māori traditions, and connecting with ancestral knowledge".

6.1.2 The acceptability of online delivery

Despite the upheaval caused by the Government's response to the threat of the COVID-19 pandemic, such as extensive lockdowns, KaiRua was able to rapidly adapt the face-to-face components to online delivery. Even delivered at a distance and online, the programme was well received by both hapū māmā and key stakeholders.

The fast adaption of the programme to delivery online, due to the first COVID-19

lockdown, meant women were able to access some support during an extra -stressful time when they may have been cut off from usual support. Though midwives were deemed essential workers, some pregnant women may have still felt uncomfortable meeting people outside their "bubble".

Establishing a private Facebook group for participants in the programme was a simple, acceptable and effective way to maintain contact with the participating māmā. It also facilitated whakawhānaungatanga (the creation of a bound group to which people feel they belong), and peer-support. It should be noted that the support for the māmā from KaiRua was available within the Facebook group, but also via private Facebook messenger, text or email. This support was not restricted to usual business days and hours. This kind of on-call, one-on-one support may not be feasible with a larger number of participants, or if multiple programmes are running at the same time. It is recommended that KaiRua investigate digital tech-anga ways to extend support in the absence of the programme lead. For example, there is a wide range of artificial intelligence technology or automated response applications. However, the acceptability of a 'canned' response would need to be trialled.

Whilst the programme offered support online, some māmā would still have preferred to attend wānanga in a face-to-face context with digital resources as an added extra. We conclude that in the future both delivery options should be an option, enabling greater engagement as well as better access to support for rural women or women experiencing mental health or other health conditions that inhibit their attendance at face-to-face wānanga.

6.2 Potential effectiveness

An important potential of the Heru & Hapū Māmā programme is that it was designed for hapū māmā who are in the first or second trimester of pregnancy. Smoking cessation support provided within most antenatal programmes, and programmes aimed at preventing SUDI, mainly reach women later in their pregnancy, or after pēpi is born. For example, hapū māmā usually don't enrol in wahakura-weaving wānanga until they are getting closer to needing the wahakura (that is, they are usually in their third trimester). Similarly, the programmes that provide wahakura (or pēpi pods) usually don't occur until this time. Delivery

of stop-smoking support, whilst never too late, would have a greater effect on reducing the negative health effects of smoking if provided as early in pregnancy as possible.

Previous programmes that have been effective at engaging hapū māmā in programmes earlier in pregnancy are incentive programmes. But, few of these appear to be delivered from a grounding in kaupapa Māori. Whilst, the Heru & Hapū Māmā programme appears to be highly attractive and has high potential to be effective at reducing smoking while pregnant, incorporating the use of incentives could boost that effectiveness. For example, if māmā received a voucher for attaining abstinence from smoking.

Measuring smoking status in pregnancy is difficult. If a pregnancy is unplanned, a woman who smoked and found she was pregnant may not attempt cessation immediately. Many women don't begin to tell whānau they are hapū until three months of pregnancy have passed. Still, getting cessation support to women as soon after confirmation of pregnancy is preferable for reducing risk of harm. Heru & Hapū Māmā is relevant for women from conception. Being able to use exhaled carbon monoxide monitors would have enabled better monitoring of smoking status. The māmā in this trial stopped and started and stopped again. This has been found in other trials. Unlike usual stop-smoking programmes, monitoring the need for cessation support for pregnant women must occur on a continuous basis throughout pregnancy.

The abstinence goal needs to be pragmatic. For example, complete sustained abstinence is best. Next best is having as many days without smoking as possible. Then, next best is having as few cigarettes as possible. Vaping appeared to be a popular alternative. If women cannot stop smoking completely, they should be supported to replace smoking with use of a non-combustible alternative (Glover & Phillips, 2020). After all, it is the inhalation of smoke that delivers most of the harm.

Measuring smoking status needs to be adapted to record these varied consumption patterns. Future Heru & Hapū Māmā programmes could investigate incorporating some simple daily app for recording cigarettes per day and rewarding, preferably with incentives, days without a smoke. The combination of this kind of pragmatic approach with the value and aroha of the Heru & Hapū Māmā programme, incentives, and reduction of barriers to vaping could increase the potential of Heru

& Hapū Māmā to enable māmā to maximise risk reduction for their pēpi.

6.3 Strengths & Limitations

The results do not represent all pregnant Māori women who smoke. This programme helped to identify that traditional Māori protocols and practice can be utilised as a means to facilitate smoking cessation. The restrictions of the global COVID-19 pandemic placed restraints on the programme and its delivery; however, KaiRua, the presenters and the māmā were able to create a wānanga-type learning space online to foster growth and development.

The process of using the KaiRua Facebook page for recruitment and referral of potential māmā worked to a certain degree. However, the reach of the page was largely focused on the Waikato region. For potential future recruitment outside of Waikato, there will need to be different advertising methods such as approaching iwi/hapū/whānau health providers or relevant community groups in other areas.

6.4 Outcome

Smoking while pregnant raises ill-health risks for the pregnant woman, the health of her pregnancy and the child while in utero. Reducing the numbers of infants lost to SUDI has been a Ministry of Health priority for almost 30 years. The recent rise in SUDI rates suggests that something new is needed. Heru & Hapū Māmā is a Kaupapa Māori programme. It is innovative, uses the latest in mobile technologies, is highly attractive to Māori women in their first and second trimester, and can be delivered face-to-face, remotely or as a hybrid of both modes. Heru & Hapū Māmā would complement and could extend the reach of existing SUDI prevention and pregnancy wellbeing programmes. We strongly recommend it be developed further.

Our results suggest that the Heru & Hapū Māmā programme was feasible and had potential to reduce smoking during pregnancy. This was obvious to KaiRua and the stakeholders by the end of the programme, so it is not surprising that following the completion of the trial and with lockdowns over, KaiRua was immediately asked to run a face-to-face pilot of the Heru & Hapū Māmā

programme for a Hamilton-based health service. Other providers have since shown interest in the programme and further programmes have been run.

Glossary

Ao	World
Aroha ki te tāngata	Love toward / for the people
Aukati karakia	Cessation prayer
Hapū	Sub-tribe / Pregnancy
Harakeke	Phormium tenax / Flax
Hauora	Health
Hauora Hapūtanga	Pregnancy Health Promotion
Hautaka	Journal
Herehere	Binding
Heru	Hair comb
Heru tikitki	Heru worn in topknot of hair
Heru tū rae	Heru worn at the front of the head
Hine Ahuone	First earthly woman created by the Gods
Hinengaro	Mind
Hue	Gourd
Hui	Meeting / Gathering
Ipu Whenua	Container to store the afterbirth
Iwi	Tribe / Bone
Kahuri	Turn / Change
Kai	Food / Sustenance
Kaiako	Teacher
Kaihaka	Māori cultural performer
Kaikaranga	Traditional Māori caller
Kaikōrero	Speaker / Orator
KaiRua	Fusion of the words Kai and Rua
Kaitiaki	Guardian / Protector

Kaitiakitanga	Guardianship / Protection
Kākahu	Traditional Māori clothing
Kānohi ki te kānohi	Face to face
Karakia	Prayer / Incantation / Meditation
Karanga	Formal call, ceremonial call, welcome call
Karere	Notice
Kaumātua	Māori elders
Kaupapa	Framework / Topic
Kaupapa Māori	Māori framework
Kauwae Runga	Esoteric knowledge
Kawa	Traditional Māori Protocol
Kete	Māori basket (usually comprised of flax)
Kōrero	Talk / Discussion
Kōrerorero	Robust talk / discussion
Kuia	Māori female elder
Māmā	Mother
Māori	Indigenous people of New Zealand
Mātauranga	Knowledge / teachings
Mātauranga Hangarau	Information technology
Mātauranga Māori	Māori knowledge / teachings
Mana	Strength / Courage
Manaakitanga	Care / Compassion
Marae	Traditional Māori meeting place
Mirimiri	Māori massage
Moko	Short form of the word mokopuna
Mokopuna	Grandchild

Noho marae	Gatherings held at marae
Ora	Health
Oriori	Traditional Māori lullaby
Pānui	Notice / Questionnaire
Pātai	Question / Query
Pepeha	Genealogy to the universe
Pēpi	Baby
Pito	Umbilical cord
Pōwhiri	Traditional Māori welcome ceremony
Pūmoana	Conch shell trumpet
Pūrākau	Myth, cultural story
Pūtatara	Māori trumpet-like instrument
Rauemi	Resources
Rongoā Māori	Traditional Māori healing
Rūnanga	Support system / Council
Taha Wairua	Spiritual Side
Tangihanga	Funeral, rites for the dead
Taonga	Treasure / Gift
Taonga Pūoro	Traditional Māori instruments
Tapu	Sacred / restricted
Tautoko	Support
Te Ao Mārama	The World of Light / Physical world
Te Reo Māori	The Māori language
Tikanga	Protocol / Processes
Tikanga Māori	Traditional Māori Protocol / Processes
Tinana	Body

Tīpuna Kōrero	Ancestral teachings
Tohu	Sign
Tō	Your
Tupeka kore	Tobacco-free
Wāhine	Women (plural)
Wāhine Māori	Māori women
Wāhine Toa	Strong / Brave woman
Wahakura	Woven flax bassinet
Wahine	Woman (individual)
Wānanga	Māori traditional school of learning
Wai	Water
Whakaaro	Thoughts / Thinking
Whakamā	To be shy
Whakapapa	Genealogy of the individual
Whakatuara hauora hapūtanga	Pregnancy health promotion
Whakawhānaungatanga	Become familiar with an individual or a group
Whānau	Family
Whānaungatanga	Be like a family
Whare	House / Dwelling
Whatumanawa	Emotions

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Appendix

Appendix A
Participant information/Consent form

HERU & HAPŪ MĀMĀ PROJECT: REINSTITUTING TRADITIONAL PRACTICES TO REDUCE SMOKING WHILE PREGNANT

Participant Information Sheet

You are invited to take part in this feasibility study about reinstituting traditional practices to reduce smoking amongst hapū Māori women.

This participant information sheet will help you decide if you would like to take part. It explains why we are doing the study, what your participation involves, and what happens after the study ends. We will go through this information with you and answer any questions you have. Please make sure you have read and understood all the pages. If you agree to participate, you will be asked to sign a consent form.

Who is running the study?

The study is being carried out by Patrick Salmon (Ngāti Awa, Tūhoe), founder of KaiRua. Toumairangi Marsh (Te Atiawa ki Taranaki me Te Atiawa ki Te Whanganui a Tara), an independent evaluator will be helping assess the Heru & Hapū Māmā project.

Why are we doing this study?

In many Indigenous communities, traditional knowledge of health and rongoa (Māori medicine and healing practices) has been lost or suppressed. In modern times many Indigenous women experience a lack of access to culturally appropriate services and support, especially during pregnancy and childbirth. Smoking is known to be damaging for both the health of a māmā's pregnancy and her developing pēpi. Due to colonisation, Māori women have the highest smoking

rates in New Zealand. Previous research with pregnant Māori women suggests that hapūtanga support programmes might be more effective if they are based on Mātauranga Māori.

The objective of this study is:

To assess the feasibility the acceptability of the Heru & Hapū Māmā Project, and whether participation in the Heru & Hapū Māmā Project could help pregnant Māori women to not smoke during the remainder of their pregnancy.

Who is being invited to participate?

We are inviting:

- Māori women aged 18 and over who are in their 1st or 2nd trimester who want to stop smoking for their pregnancy.
- All participants must have a smartphone and Facebook account; be able to communicate in English and be willing to attend ALL three Heru & Hapū Māmā wananga (workshops / focus groups).

Do I have to take part in the study?

You do not have to take part in this study. Participation is entirely voluntary, and you may withdraw up at any stage for any reason (or no reason at all).

What is involved?

You will be asked to complete a short questionnaire about yourself at the beginning of the study and there will be a questionnaire at the end. You will need to complete all three online DIGI-WĀ (digital wānanga) where you will learn the kaupapa of the heru. Audio recordings of discussions at the hui will be made for evaluation purposes only through the fortnightly Zoom Hui or private hui that can be requested as an individual option via zoom or phone. You will be given a heru

and other programme resources. You will need to download the KaiRua App on to your phone and you will need to join the closed Heru & Hapū Māmā Facebook group. You will also be asked to write in a journal, which you will be given. The journal is used alongside the App. After each DIGI-WĀ you will be asked to complete a brief online survey which will track how your smoking levels are - this will be recorded as part of your progress data.

How long will the study take?

Your involvement in the study will take 3 months commencing on the 14th of May 2020.

What about privacy?

Any information you supply about yourself will be confidential. Any information that could give away your identity will be removed from the data. No information that could personally identify you will be typed into the transcripts from the audio recordings of the focus group hui. Instead of writing your name, a unique identifying code will be used on the questionnaire and koha like additional supporting Tāonga and resources will have forms and those will be stored separately from the consent forms. All paper-based information (such as questionnaires and consent forms), will be kept in locked storage cabinets in the secured premises of KaiRua, Toumairangi Marsh and the Centre of Research Excellence: Indigenous Sovereignty & Smoking in Auckland for a period of 6 years after which it will be destroyed. If digital video or photo files are needed for reporting the results of the study, your permission will be sought before these are used. Any digital information, video recordings and photographs will be stored on password protected computers for a period of 6 years after which the files will be deleted.

Following publication of the results of the study, the raw data (statistics and quotes) stripped of all identifying information including town of residence and any regionally or tribally specific terms will be made available online.

What are the risks of participating?

There is a risk that involvement in this study does not help you to stop smoking. Continuing to smoke when pregnant increases the risks of several negative pregnancy outcomes. Your pēpi will also be at higher risk of several illnesses that have been associated with māmā smoking during pregnancy. The Heru & Hapū Māmā Project is designed to complement existing effective stop smoking methods and will introduce you to some Māori health service providers who can help you with stopping smoking.

If you suffer an injury or health problem during the project that impacts on your ability to complete and/or participate, our support will be to put your physical wellbeing first and it would be understood that you may not be able to continue on.

What will happen as a result of this study?

The data collected will be combined with data from other participants. This will be analysed and used to produce results presentations, academic assignment content and a paper which will be submitted to a science journal.

When will the results be available?

Analysis of the results and preparation of presentation materials, reports or papers could take up to 12 months to complete. You will be asked to provide a contact email or address if you would like to receive a copy of the published results. It could be 12 months before the results are published.

Funding

This study is funded by Dr Marewa Glover's Centre of Research Excellence: Indigenous Sovereignty & Smoking as part of her programme of research

supported by a grant from the Foundation for a SmokeFree World, Inc. Dr Glover's Centre is independent from the Foundation for a Smoke-Free World, Inc. and neither the Foundation nor any tobacco or vaping company has any influence over the studies conducted by the Centre or organisations and researchers that the Centre funds. The contents, selection and presentation of facts, as well as any opinions expressed by KaiRua and Toumairangi Marsh are the sole responsibility of them and under no circumstances shall be regarded as reflecting the positions of the Centre of Research Excellence: Indigenous Sovereignty & Smoking or the Foundation for a Smoke-Free World, Inc.

What next?

If you want to be involved in this research, please read, and sign the consent form (to be supplied) and return it to KaiRua or the evaluator.

Contact persons

If you have any concerns or complaints arising from your participation in this research, you may contact:

Patrick Salmon, KaiRua NZ Ltd on (022) 0740431
Toumairangi Marsh on (027) 6966937

Professor Marewa Glover, Centre of Research Excellence: Indigenous Sovereignty & Smoking on (027) 275 7852; 0800 285 284

Te Wānanga o Aotearoa Ethics committee: *Dr Gloria Taituha* on November 15th, 2019

Kia Ora. Thank you

HERU & HAPŪ MĀMĀ PROJECT: REINSTITUTING TRADITIONAL PRACTICES TO REDUCE SMOKING WHILE PREGNANT

Consent Form

Researchers:

Patrick Salmon, KaiRua Ltd
Toumairangi Marsh (Te Atiawa ki Taranaki me Te Atiawa ki Te Whanganui a Tara), independent evaluator

- I have read, and have understood, an explanation of this research project. I have had an opportunity to ask questions and have them answered.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason.
- I understand that audio recordings of focus group discussions will be made for evaluation purposes only.
- I understand that no information that could identify me will be made public in any way.
- I agree to take part in the study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

(please circle which is applicable)
I do not want to receive a summary of the results No
I would like to receive a summary of the results. Yes
Email: _____ or

Postal address: _____

Appendix B
Baseline Questions for Māmā

Section One – Māmā details

1. What is your name?

Full name:
Name on Facebook:
Address:
Email address:
Contact phone number:

2. What is your date of birth?

3. What is your highest level of education?

- ☐ High School Certificate
- ☐ University Entrance
- ☐ Undergraduate Degree
- ☐ Postgraduate Degree
- ☐ Master's Degree
- ☐ PhD Degree
- ☐ Other

4. What is your current employment status? (Click on all that apply)

- ☐ Studying
- ☐ Part-time work
- ☐ Full time employment
- ☐ Unemployed / Receiving financial assistance (e.g. WINZ)

5. Do you have a Community Services Card?

- ☐ Yes
- ☐ No

6. What is your current relationship status?

- ☐ Single, never married
- ☐ Single, but cohabiting with a significant other
- ☐ In a domestic partnership or civil union
- ☐ Married
- ☐ Separated
- ☐ Divorced
- ☐ Widowed

7. Who, if anyone, currently lives with you in your household?
(Please include permanent residents only. Please select all that apply).

- ☐ Child
- ☐ Grandchild
- ☐ Parent
- ☐ Grandparent
- ☐ Roommate OR Friend
- ☐ Romantic partner (spouse, partner, boyfriend, girlfriend, etc)
- ☐ None of the above

8. How many adults 18+ (including yourself) live in your household?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 5+

9. How many children (17 years old or under) live in your household?

- [ ] None
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4
- [ ] 5
- [ ] 5+

10. Is this your first pregnancy?

- [ ] Yes
- [ ] No
- [ ] Prefer not to say

11. What stage of pregnancy are you in?

- [ ] First trimester (1-12 weeks)
- [ ] Second trimester (13 – 28 weeks)
- [ ] Third trimester (29-40 weeks)

Section 2 – Smoking status

12. What age did you first try a cigarette?

- [ ] Under 18
- [ ] 18-24
- [ ] 25-34
- [ ] 35-44
- [ ] 45-54

13. What age did you become a regular daily smoker?

- [ ] Under 18
- [ ] 18-24
- [ ] 25-34
- [ ] 35-44
- [ ] 45-54

14. How many cigarettes did you smoke each day prior to finding out you were pregnant?

- [ ] None / Zero
- [ ] I smoked every week but not every day
- [ ] 1 - 5 a day
- [ ] 6 - 10 a day
- [ ] 11 – 20 a day
- [ ] 21 or more a day

15. How many cigarettes do you smoke per day now?

- [ ] 1-5 a day
- [ ] 6-10 a day
- [ ] 11-20 a day
- [ ] 20 or more a day

16. Does your partner smoke?

- [ ] Yes
- [ ] No
- [ ] Not applicable / Do not have a partner

17. How many people in your household (including you) smoke?

- [ ] 1
- [ ] 2
- [ ] 3

- [ ] 4
- [ ] 5
- [ ] 6 or more

18. Do you get cravings to smoke?

- [ ] Yes
- [ ] No
- [ ] Sometimes or Occasionally

19 .How soon after you wake up do you smoke your first cigarette?

- [ ] Within 5 minutes
- [ ] 6-30 minutes
- [ ] 31-60 minutes
- [ ] After 60 minutes

20. What do you usually smoke?

- [ ] Cigarettes (Manufactured)
- [ ] Tobacco (Rollies)
- [ ] Homegrown tobacco
- [ ] Other

21. Do you want to stop smoking?

- [ ] Yes – I want to stop smoking altogether while I'm pregnant
- [ ] Yes – I want to stop smoking altogether and not pick it up again in the future
- [ ] No – I want to cut down how many smokes I have as much as I can
- [ ] No – I have already cut down how much I smoke as much as I can

22. On a scale from 1 to 5, how confident are you that you can stop smoking

for the rest of your pregnancy?

- [ ] 1 – I am not confident that I can stop smoking at all
- [ ] 2 – I might be able to do this with support
- [ ] 3 – I am reasonably confident I should be able to stop smoking
- [ ] 4 – I am mostly confident that I can stop smoking
- [ ] 5 – I'll definitely stop this time (very confident)

23. If you do stop smoking during this pregnancy, do you plan to stay off smoking?

- [ ] Yes – I am planning to stop smoking and stay stopped
- [ ] No – I am planning to not smoke just while I'm pregnant
- [ ] Don't know

24. Have you tried any of the following methods to cut down or quit smoking? (Click on all that apply)

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix / Zyban / Nortryptiline
- [ ] Vaping nicotine
- [ ] Other

25. Have you tried vaping?

- [ ] Yes
- [ ] No
- [ ] Occasionally
- [ ] Currently using

26. Would you be interested in learning more about any of the following products that could help you to stop smoking? (Click on all that apply).

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix / Zyban / Nortryptiline
- [ ] Vaping Nicotine
- [ ] Nicotine Spray
- [ ] Nicotine Toothpicks
- [ ] Nicotine Oral Pouches
- [ ] None of the above

Section Three – Mātauranga Māori

27. What are your primary iwi affiliations?

28. What are your primary hapū affiliations?

29. What is your level of fluency in Te Reo Māori?

- [ ] Know a few words or phrases
- [ ] Able to have a basic conversation
- [ ] Able to have a conversation about everyday things
- [ ] Able to have a conversation across all aspects of things (e.g. at home/work/marae)

30. Have you been involved in any Mātauranga Māori practises? (Click on all that apply)

- [ ] Rongoa / Indigenous Medicine
- [ ] Karakia / Meditation
- [ ] Involved with local Marae
- [ ] Player of Māori musical instruments
- [ ] Other
- [ ] None of the above

31. What is your current knowledge pertaining to the heru?

- [ ] I do not know much beyond that a heru is a Māori hair comb
- [ ] I know a little bit about the traditional significance of the heru
- [ ] I know quite a lot about heru

32. Do you have access to a stable internet connection?

- [ ] Yes
- [ ] No

33. Are you able to commit to the Heru & Hapū Māmā Programme?

- [ ] Yes
- [ ] No

34. Are you committed to completing all Heru & Hapū Māmā surveys and info sheets provided?

- [ ] Yes
- [ ] No

35. Are you available for a 1-hour ZUI (Zoom hui) once a fortnight?

- [ ] Yes
- [ ] No

36. What is your t-shirt size?

37. What are three things you would like to get out of this programme?

Appendix C
Follow-up Questions (Digi-Wā 1)

1. What is your name?

2. How did you find using the KaiRua App?

- [ ] Easy
- [ ] Alright
- [ ] Hard
- [ ] I wasn't able to use it

3. Do you think the App could be improved? If so, how?

4. What were your first thoughts of the Digi-Wā? Was it what you expected?

5. What was your highlight of the Digi-Wā?

6. What was your least favourite part of the Digi-Wā?

7. How are you finding the Heru & Hapū Māmā Facebook group?

- [ ] Extremely helpful
- [ ] Very helpful
- [ ] Somewhat helpful
- [ ] Not so helpful
- [ ] Not at all helpful

8. What kind of content would you like to see on the Heru & Hapū Māmā

Facebook Group?

9. What has your smoking level been like since you registered for the programme?

- [ ] Smoking more
- [ ] Smoking the same
- [ ] Smoking less

10. What has your smoking level been like since you received your heru resource pack?

- [ ] Smoking more
- [ ] Smoking the same
- [ ] Smoking less

11. How many cigarettes do you smoke per day now?

- [ ] 1-5 a day
- [ ] 6-10 a day
- [ ] 11-20 a day
- [ ] 21 or more a day

12. Has the programme helped to deal with cravings? How?

13. How soon after you wake up do you smoke your first cigarette?

- [ ] Within 5 minutes
- [ ] 6-30 minutes
- [ ] 31-60 minutes
- [ ] After 60 minutes
- [ ] Not applicable

14. What part of the day do you find your craving is at its highest?

- [ ] First thing in the morning
- [ ] Midday
- [ ] In the evening
- [ ] All of the above
- [ ] None at all

15. After this first Digi-Wā, on a scale from 1 – 5, how confident are you that you can stop smoking for the rest of your pregnancy?

- [ ] 1 – I am not confident that I can stop smoking at all
- [ ] 2 – I might be able to with support
- [ ] 3 – I am reasonable confident I should be able to stop smoking
- [ ] 4 – I am mostly confident that I can stop smoking
- [ ] 5 – I'll definitely stop this time (very confident)

16. Since being in Lockdown and Self Isolation, has this had an effect on your smoking?

- [ ] Smoking more
- [ ] Smoking the same
- [ ] Smoking less

17.Why do you think this is?

18. Has the Level 4 and Level 3 lockdown stages affected your access to purchasing tobacco products?

- [ ] Yes
- [ ] No

19.Have you tried any of the following methods to cut down or quit smoking? (Click on all that apply)

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix/Zyban/Nortryptiline
- [ ] Vaping nicotine
- [ ] Other

20. Would you be interested in learning more about any of the following products that could help you to stop smoking? (Click on all that apply)

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix/Zyban/Nortryptiline
- [ ] Vaping nicotine
- [ ] Nicotine Spray
- [ ] Nicotine Toothpicks
- [ ] Nicotine Oral Pouches
- [ ] None of the above

21. Would you smoke while wearing your heru?

- [ ] Yes
- [ ] No

22. Why is that?

23. Have you currently been receiving support from any other services in regard to quitting smoking or pregnancy?

- [ ] Yes

- [ ] No
- [ ] Prefer not to say

24. Can you identify who your key support person or people are? (Click on all that apply)

- [ ] Partner
- [ ] Whānau
- [ ] Flatmates
- [ ] Friends
- [ ] Workmates
- [ ] Other
- [ ] I cannot identify a support person or people at this time.

25. How are you finding the support from others?

- [ ] Need more support
- [ ] Have enough support
- [ ] I am overwhelmed by all the support / It is becoming a distraction
- [ ] I need an outside party / neutral person to talk to

26. What support (if any) would you like to have moved forward between now and the next Digi-Wā?

27. Would you be open to take part in a video interview before the next Digi-Wā?

- [ ] Yes – Can I have more information
- [ ] No
- [ ] Do not know

Appendix D
Follow-up Questions (Digi-Wā 2)

1. What is your name?

2. How are you finding using the KaiRua App?

- [ ] Easy
- [ ] Alright
- [ ] Hard
- [ ] I wasn't able to use it

3. Do you think the App could be improved? If so, how?

4. What were your first thoughts of the Digi-Wā? Was it what you expected?

5. What was your highlight of the Digi-Wā?

6. What was your least favourite part of the Digi-Wā?

7. How are you finding the Heru & Hapū Māmā Facebook group?

- [ ] Extremely helpful
- [ ] Very helpful
- [ ] Somewhat helpful
- [ ] Not so helpful
- [ ] Not at all helpful

8. What kind of content would you like to see on the Heru & Hapū Māmā Facebook Group?

9. What has your smoking level been like since the first Digi-Wā?

- [ ] Smoking more
- [ ] Smoking the same
- [ ] Smoking less

10. How many cigarettes do you smoke per day now?

- [ ] 1-5 a day
- [ ] 6-10 a day
- [ ] 11-20 a day
- [ ] 21 or more a day
- [ ] Using an alternative method to smoke / Not smoking cigarettes

11. Is the programme helping you to deal with cutting down smoking cigarettes? How?

12. How soon after you wake up do you smoke your first cigarette?

- [ ] Within 5 minutes
- [ ] 6-30 minutes
- [ ] 31-60 minutes
- [ ] After 60 minutes
- [ ] Not applicable

13. What part of the day do you find your craving is at its highest?

- [ ] First thing in the morning
- [ ] Midday
- [ ] In the evening
- [ ] All of the above

- [ ] None at all

14. Do you think there is something that leads you to having cravings? What do you think that is?

15. After the second Digi-Wā, on a scale from 1 to 5, how confident are you that you can stop smoking for the rest of your pregnancy?

- [ ] 1- I am not confident that I can stop smoking at all
- [ ] 2 – I might be able to with support
- [ ] 3 – I am reasonably confident I should be able to stop smoking
- [ ] 4 – I am mostly confident that I can stop smoking
- [ ] 5 – I'll definitely stop this time (very confident)

16. Since Lockdown and Self Isolation being lifted, has this had an effect on your smoking?

- [ ] Smoking more
- [ ] Smoking less
- [ ] Smoking the same

17. Why do you think that is?

18. Have you tried any of the following methods to cut down or quit smoking? (Click on all that apply)

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix/Zyban/Nortryptiline
- [ ] Vaping nicotine
- [ ] Other

19. Would you be interested in learning more about any of the following products that could help you to stop smoking? (Click on all that apply)

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix/Zyban/Nortriptyline
- [ ] Vaping Nicotine
- [ ] Nicotine Spray
- [ ] Nicotine Toothpicks
- [ ] Nicotine Oral Pouches
- [ ] None of the above

20. Are you wearing your heru?

- [ ] All the time
- [ ] Sometimes
- [ ] Only during the Digi-Wā
- [ ] During times of craving cigarettes
- [ ] Not at all

21. Why is that?

22. Have you completed your oriori for your pēpī?

- [ ] Yes
- [ ] No
- [ ] I would like some help with it

23. Have you currently been receiving support from any other services in regard to quitting smoking or pregnancy?

- [ ] Yes
- [ ] No

- [ ] Prefer not to say

24. Can you identify who your key support person or people are? (Click on all that apply)

- [ ] Partner
- [ ] Whānau
- [ ] Flatmates
- [ ] Friends
- [ ] Workmates
- [ ] Other
- [ ] I cannot identify a support person or people at this time

25. How are you finding support from others?

- [ ] Need more support
- [ ] Have enough support
- [ ] I am overwhelmed by all the support / it is becoming a distraction
- [ ] I need an outside party / neutral person to talk to

26. What support (if any) would you like to have moving forward between now and the next Digi-Wā?

27. Would you be open to take part in an individual interview before the next Digi-Wā?

- [ ] Yes – Can I have more information
- [ ] No
- [ ] Do not know

Appendix E
Follow-up Questions (Digi-Wā 3)

1. What is your name?

2. Are you still using the KaiRua App?

- ☐ Yes – All the time
- ☐ Yes – Sometimes
- ☐ Yes – Not very often
- ☐ No

3. Do you think the App needs anything added to it? If yes, can you expand on this please?

4. Have you shared the KaiRua App with anyone else? What feedback did you get?

5. What were your first thoughts of the Digi-Wā?

6. Was it what you expected?

7. What was a highlight of the Digi-Wā?

8. What was your least favourite part of the Digi-Wā workshop?

9. What was a taonga, skill or idea that you were able to identify that you were passionate about?

10. Would having more money increase your ability to create the new change you want to make? How?

11. From this, do you have a business idea?

- ☐ Yes
- ☐ No

12.Do you think working on a project for a business idea is helping with the challenge of reducing your smoking? Why do you think this is?

13. Are you a member of KaiRua?

- ☐ Yes
- ☐ No

14. Do you find KaiRua to be a comfortable space to share in? Why is this?

15. How are you finding the Heru & Hapū Māmā Facebook group?

- ☐ Extremely helpful
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ Not so helpful
- ☐ Not at all helpful

16. What are your thoughts with the ongoing content on the Heru & Hapū Māmā Facebook group?

17. Are you happy with the connection with others in the Facebook group?

18. Are there any improvements / additions that you think could be added to the Heru & Hapū Māmā Facebook group?

19. What has your smoking level been like since the second Digi-Wā?

- [ ] Smoking more
- [ ] Smoking the same
- [ ] Smoking less

20. How many cigarettes do you smoke per day?

- [ ] 1-5 a day
- [ ] 6-10 a day
- [ ] 11-20 a day
- [ ] 21 or more a day
- [ ] Using an alternative method to smoke / Not smoking cigarettes

21. Is the programme helping you to deal with cutting down smoking cigarettes? Can you explain reasons why that is?

22. How soon after you wake up do you smoke your first cigarette?

- [ ] Within 5 minutes
- [ ] 6-30 minutes
- [ ] 31-60 minutes
- [ ] After 60 minutes
- [ ] Not applicable

23. What part of the day do you find your craving is at its highest?

- [ ] First thing in the morning
- [ ] Midday
- [ ] In the evening
- [ ] All of the above

- [ ] None at all

24. Do you think there is something that leads to you having cravings? What do you think this is?

25. After this third Digi-Wā, on a scale from 1 to 5 how confident are you that you can stop smoking for the rest of your pregnancy?

- [ ] 1 – I am not that confident that I can stop smoking at all
- [ ] 2 – I might be able to with support
- [ ] 3 – I am reasonably confident I should be able to stop smoking
- [ ] 4 – I am mostly confident that I can stop smoking
- [ ] 5 – I'll definitely stop this time (very confident)

26. Have you tried any of the following methods to cut down or quit smoking? (Click on all that apply)

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix/Zyban/Nortriptyline
- [ ] Vaping Nicotine
- [ ] Other

27. Would you be interested in learning more about any of the following products that could help you to stop smoking? (Click on all that apply)

- [ ] Nicotine Gum
- [ ] Nicotine Lozenges
- [ ] Nicotine Patches
- [ ] A medicine such as Champix/Zyban/Nortriptyline
- [ ] Vaping Nicotine
- [ ] Nicotine Spray
- [ ] Nicotine Toothpicks

- [ ] Nicotine Oral Pouches
- [ ] None of the above

28. Are you wearing your heru? How often and in what situations?

29. Have you currently been receiving support from any other services in regard to quitting smoking or pregnancy?

- [ ] Yes
- [ ] No
- [ ] Prefer not to say

30. Can you identify who your key support person or people are? (Click on all that apply)

- [ ] Partner
- [ ] Whānau
- [ ] Flatmates
- [ ] Friends
- [ ] Workmates
- [ ] Other
- [ ] I cannot identify a support person or people at this time

31. How have your support systems been working alongside the programme?

32. Were you able to identify who is on your personal Runanga?

33. How does your Runanga support you to keep reducing your smoking intake?

34. Would you recommend the Heru & Hapū Māmā programme to other wāhine who are wishing to quit smoking during pregnancy?

Appendix F
Follow-up Questions (Selected Participant Interviews)

1	Name	
2	How many weeks pregnant are you?	_____Weeks Already given birth on _____
3	What is your due date?	
4	Did you stop or cut down smoking during this pregnancy? *Can you tell me more about that?* *How was the support of KaiRua in helping you to [cut down/stop smoking] for you?* *Was it helpful for you?*	☐ Stopped ☐ Cut down ☐ No

5	What stop smoking methods did you use to help you cut down/stop smoking? (Choose as many as apply) *How did it help you?* *Do you have any suggestions what would have been more helpful for you to stop smoking?*	☐ Quitline Phone ☐ Quitline Txt2Quit ☐ Quitline Online Coach ☐ Quitline Blog ☐ Stop smoking coach/counsellor ☐ Nurse ☐ Doctor (advice, support) ☐ Midwife ☐ KaiRua Heru ☐ Prescription only stop smoking medicine (like Zyban, Champix, Norpress) ☐ Nicotine Patches ☐ Nicotine Gum ☐ Nicotine Inhaler ☐ Nicotine Lozenges ☐ Nicotine QuickMist ☐ Electronic Cigarette ☐ Hypnosis ☐ Acupuncture ☐ Self-help book ☐ Other (please specify)
6	Was there someone other than Patrick / KaiRua who supported you to stop smoking? *How did they help you?*	☐ Yes *Who? (please specify)* --- ☐ No
7	Did anyone else in your household change their smoking because you are/were pregnant? *Did that help you?* *Did they help you?*	☐ Yes *Who? (please specify)* --- ☐ No

8	Did any others in your family / household stop smoking during your pregnancy? *Did that help you?* *Did they help you?*	☐ Yes *Who? (please specify)* --- ☐ No
9	Are there people smoking in your house? *How does that make you feel?* *Have you talked with them about reducing their intake / stopping smoking?*	☐ Yes *Who? (please specify)* --- ☐ No
10	For those of you who are smoking now How soon after you wake up do you smoke your first cigarette?	☐ Within 5 minutes ☐ 6-30 minutes ☐ 31-60 minutes ☐ After 60 minutes
11	Did you receive the KaiRua Heru [repeat for Heru App / Did you watch Digi-Wā 1 / 2 / 3... Did you follow and read the Heru & Hapū Māmā Facebook page ... etc? *What did you like/not like about the [insert which resource or component]?* *Was it helpful for you?*	☐ Yes ☐ No
12	What do you think about the KaiRua support and the information that the Heru & Hapū Māmā programme gave you? *Why was it good?* *Why wasn't it good?* *Did it make a difference for you?*	☐ Good *Why?* --- ☐ Not good *Why not?* ---

13	If you look back on the time since the KaiRua asked you What could have been done different to support you stop smoking • *By KaiRua* • *By Midwife / Health professionals* • *By your friends and family*	
14	Is there anything else you want to say about how pregnant mums can be helped with stop smoking?	

Appendix G
Follow-up Questions (Key Stakeholder Interviews)

Kairua H&HM Interview Schedule
Stakeholder Questions

1	Have you had a chance to look at the [insert resource or component e.g. Heru, AR, Digi-Wa] *What did you like/not like about the [insert which resource or component]?* *Did you find it easy to use?* *What do you think could be changed?*	☐ Yes ☐ No
2	What are your thoughts pertaining to KaiRua and Patrick? *Is he approachable?* *Can anyone access his material?*	

3	In your opinion, is there anything currently being offered that has a Kaupapa Māori perspective?	☐ Yes *How are they effective?* --- ☐ No *What is needed / missing?* ---
4	Does Kaupapa Māori have a place in cessation programs?	☐ Yes *Why?* --- ☐ No *Why?* ---
5	Should AR be used as a means of transmission of Mātauranga Māori?	☐ Yes *Why?* --- ☐ No *Why?* ---
6	Should digital technology be used as a means of transmission of Mātauranga Māori? *Should this program be all online/ offline/bit of both? Why?*	☐ Yes *Why?* --- ☐ No *Why?* ---

7	Do you think there is a part for the HHM program on a local / national / international level? *Why would it work?* *Why wouldn't it work?* *How is it different to the current programs?*	☐ Yes *Why?* --- ☐ No *Why?* ---

Check out the Digi Wa 1 Promo