scope

Contemporary Research Topics

health & wellbeing 7:

November 2022

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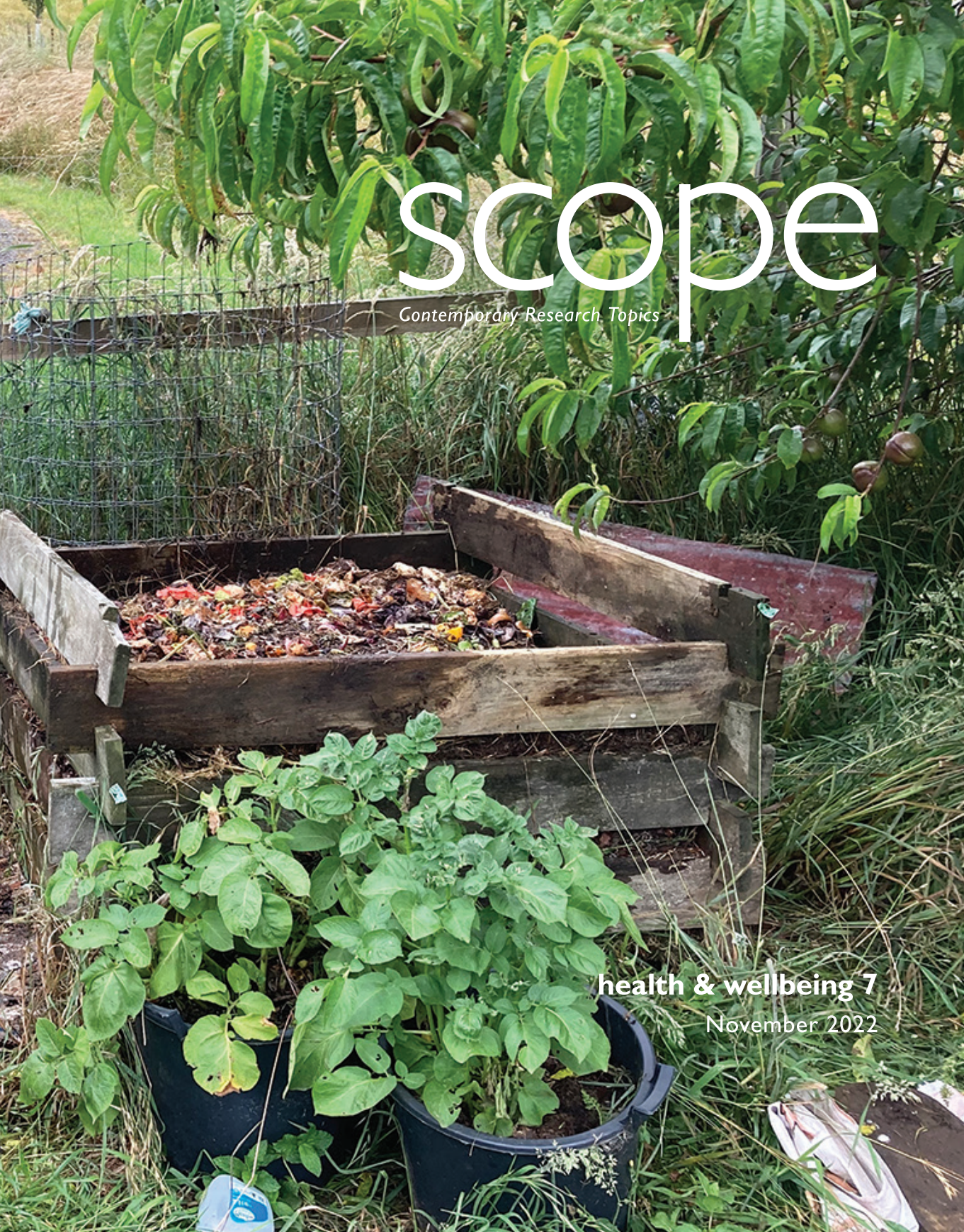

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Scope: Contemporary Research Topics (Health & Wellbeing) is concerned with views, critical debate and reflections on health and wellbeing. It seeks to address current topical matters as it relates to health, research, evidence-based practice, clinical practice, sustainability, education and global to local health.

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Scope: (Health & Wellbeing) 8, 'Connection'

Submissions for *Scope (Health & Wellbeing)* 2023 will provide the opportunity for authors to consider, discuss and debate how connection is understood in relation to health and wellbeing. Connection is about a relationship between two or more things, or groups, or people. We make a connection when we catch our second bus for the journey, pick up the dog lead and see the hound leap excitedly at us, access the internet, or have an ah-ha moment when something we read or hear about connects with something we know. Connection between self and concepts, ideas, and theory is fundamental to learning. Connection underpins collaboration, and it is through collaborative work that boundaries expand, and new understandings emerge. Connection is defined by Brene Brown as "the energy that exists between people when they feel seen, heard, and valued" (http://brenebrown.com/art/tgoi-connection).

Connection between people and within communities is fundamental to collective and individual wellbeing. The concept of whakapapa encapsulates the ultimate in connection. Being 'the process of layering one thing upon another' whakapapa helps us understand that there is connection between now and the past, between all people, and between people and the rest of the natural world. Connection is all powerful and all important

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GUIDELINES FOR CONTRIBUTORS

Submissions for *Scope (Health & Wellbeing)* should be sent by 30 June for review and potential inclusion in the annual issue to: Jean Ross (Chief Editor: jean.ross@op.ac.nz).

Please consult the information for contributors below and hardcopy or online versions for examples.

All submissions will be peer reviewed. Peer review comments will be sent to all submitters in due course, with details concerning the possible reworking of documents where relevant. All final decisions concerning publication of submissions will reside with the Editors. Opinions published are those of the authors and not necessarily subscribed to by the Editors or Otago Polytechnic.

Mātauranga Māori is a significant component of Aotearoa/New Zealand's heritage, and sharing mātauranga Māori facilitates inter-cultural dialogue and understanding that is in the national interest. However, we recognize that the originating Māori community and/or individual has the primary interest as kaitiaki over the mātauranga and we are therefore committed to ensuring that the sharing, promotion and innovation based on mātauranga Māori respects and enhances its cultural and spiritual integrity, as well as that of the originating community and/or individual.

Formats include: original research, reflections, poems, book reviews, interviews and work in progress. Other formats will also be considered.

High standards of writing, proofreading and adherence to consistency through the APA referencing style are expected. For more information, please refer to the APA Publication Manual, 7th edition; and consult prior issues for examples. A short biography of no more than 50 words; as well as title; details concerning institutional position and affiliation (where relevant); contact information (postal, email and telephone number) and ORCID number should be provided on a cover sheet, with all such information withheld from the body of the submission. Low resolution images with full captions should be inserted into texts to indicate where they would be preferred, while high resolution images should be sent separately. Enquiries about future submissions can be directed to catherine.may@op.ac.nz.

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Contemporary Research Topics

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SUSTAINABILITY AND NURSING: EVERY NURSE'S BUSINESS

Lorraine Ritchie

What does sustainability mean within the health disciplines? In this editorial I focus on sustainability and the nursing profession. The nursing profession has spent many decades defining and refining the meaning of nursing; and now the abstract concept of 'sustainability' is thrown into the mix. How can these two concepts sit alongside each other in 2022? This Journal adds to this debate, and I aim to do the same.

A small but increasing amount of literature exists on the relationship between nursing and sustainability – what it is, what it could be, and how it might evolve into the future. According to Anaker and Elf (2014), the concept of sustainability in nursing is "undefined and poorly researched", but the authors go on to state that it involves "six defining attributes: ecology, environment, future, globalism, holism and maintenance." (p. 381)

Sustainability on its own means the ability to be maintained at a certain rate or level (Collins Dictionary online, 2022), however any contemporary definition will inevitably refer to sustainability in the context of, and concerns for, the depletion of natural resources, man-made impact on the environment, climate change and how humans can address these concerns with some urgency.

The United Nations' (UN) General Assembly, 17 Sustainable Development Goals (SDGs), unanimously adopted the calls on all countries to end poverty, redress inequality, and undertake climate change by 2030. In 2015, recognizing the multidimensional factors that affect the well-being of people and the planet, member states of the United Nations declared that the common thread linking all SDGs is health (Dossey & Beck, 2019).

Nurses may feel disconnected from the Sustainable Development Goals (SDGs) and struggle to relate the goals to their clinical role, suggesting a need for an increase in awareness and education on the goals. The wider profession could also increase both research and policy with relation to the SDGs, strengthening nursing's position to have a voice in and contribute towards achievement of the goals. Sustainability in nursing demands more than the commonly known links of sustainability to the planet earth. And in this issue of SCOPE, Health & Wellbeing, I am relieved to acknowledge the broad range of published papers with a sustainable focus. The first paper is an interview capturing the innovative sustainable practice of Sharon Buchanan-Letts. The second paper extends the concept of sustainability, Jean Ross and Lesley Brook offer a commentary on the Blog they have created, linked to the United Nations 17 Sustainable Goals and Te Whare Tapa Wha model, developed by Māori academic Mason Durie in 1998. Te Whare Tapa Wha has long since been embraced in the nursing world for its inclusivity and wisdom in showing the absence of boundaries between the health of the individual, the community and the land – cornerstones of Māori tikanga.

Several of the SDGs could be seen to relate directly to nursing: Goal 3 is Good health and Wellbeing; Goal 5 is Gender Equality; Goal 10 is Reduced Inequalities. The way in which nurses carry out their role is pivotal to sustaining equality, tolerance, and acceptance. The following quote is from the Vision within the SDG United Nations (2015) report: *Transforming our world: The 2023 Agenda for sustainable development:*

We envisage a world of universal respect for human rights and human dignity, the rule of law, justice, equality and non-discrimination; of respect for race, ethnicity and cultural diversity; and of equal opportunity permitting the full realization of human potential and contributing to shared prosperity. A world which invests in its children and in which every child grows up free from violence and exploitation. A world in which every woman and girl enjoys full gender equality and all legal, social and economic barriers to their empowerment have been removed. A just, equitable, tolerant, open and socially inclusive world in which the needs of the most vulnerable are met. (p. 5)

Florence Nightingale recognised this wider view of health as Dossey and Beck (2019) have identified,

> *… the symptoms or the sufferings generally considered to be inevitable and incident to the disease are very often not symptoms of the disease at all, but of something quite different—of the want of fresh air, or of light, or of warmth, or of quiet, or of cleanliness, or of punctuality and care in the administration of diet, of each or of all of these. And this quite as much in private as in hospital nursing …*
>
> (Nightingale, 1860 cited in Dossey & Beck, 2019, p. 45)

Finally, sustainability is not a new idea for nurses. Nurses are also citizens and live within communities – like everyone they have a collective responsibility, possibly even an ethical duty towards ensuring a sustainable environment for their patients, whanau, communities, colleagues and themselves. The SDGs align with the values embedded in professional nursing ethics (New Zealand Nurses Organisation, 2019).

Additional papers published in this volume continue with the theme sustainability. Adventure therapy practice in which Helen Jeffrey shares her research; a literature review by Dave McQuillan's mindbody methods and message therapy as a treatment for fibromyalgia; Francesca Brown's research on the health of the veterinary workforce and a sustainable project related to the health of Pacific women, by Cynthia Mullens and Jean Ross.

The following authors consider sustainability aligned with the tertiary sector, Kathryn Ross, Rachel Scrivin, Mary Cooper and Campbell Macgregor's research addresses the attitudes of COVID-19 vaccinations amongst tertiary students and staff; Suzie Bartlett and Jean Ross's literature review focuses on sustainable mental health of tertiary learners and Kerry Davis shares her commentary related to sustainability in the classroom.

The final paper is a reflective piece by Kevin Miles who considers our philosophy of spirit and our relationship with our oceanic planet as a sustainable meaningful relationship. A book review *Growing Rural Health / Tipu Haere Tuawhenua Hauora: 30 years of Advocacy and support in Aotearoa* by Josie Crawley completes this journals' publications a further reflection of the Rural General Practice Network's work over a 30-year period which also fits well within the journal theme, *Sustainability*.

So, perhaps the challenge on a pragmatic, day-to-day level is what can sustainability look like for the individual nurse who may be working in a hospital or ARC or the community, public health child health, general practice and living within a community of others?

This journal is a good starting point to add to this growing debate. Thank you for the opportunity to contribute my thoughts to a growing national and international debate. Like the chosen image on the front cover titled *Making Compost* can be considered the ultimate health activity – physical, mental, nutritional, environmental. Even spiritual.

Lorraine Ritchie holds a PhD and is a Nurse Consultant in Professional Practice at Te Whatu Ora (Southern). She also works as a Lecturer part-time for the University of Otago – Centre for Postgraduate Nursing Studies. Her background in nursing includes teaching, research, management and her primary clinical passion is for gerontology nursing.

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REFERENCES

Anaker, A. & Elf, M. (2014), Sustainability in nursing: A concept analysis, *Scandinavian Journal of Caring Sciences,28,* 381–389.

Collins Dictionary English. (2022). https://www.collinsdictionary.com/dictionary/english

Dossey, B. & Beck, D. (2019). Nursing and the sustainable development goals: From Nightingale to now, *American Journal Nursing, 119*(5), 44–49.

Durie, M. (1998). *Te Mana Te Kawanatanga: Policies of Māori self-determination.* Auckland, NZ: Oxford University Press.

New Zealand Nurses Organisation (2019). Guideline – Code of ethics. Wellington, New Zealand. Author.

United Nations (2015). *Transforming our world: The 2023 agenda for sustainable development report.* https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981

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THINKING OUTSIDE THE BOX – A SUSTAINABLE HEALTH AND SAFETY INITIATIVE: AN INTERVIEW WITH SHARON BUCHANAN-LETTS, OTAGO POLYTECHNIC, DUNEDIN, NEW ZEALAND

Interviewed by Karole Hogarth

Tell me a bit about your role Sharon?

I have been the clinical technician in the School of Nursing for five years. I am involved with all nursing students at some point supporting them in their clinical experience. The main things I do are setting up laboratories (labs) for students, setting up and participating in clinical simulation scenarios for clinical learning and helping run sessions such as Hololens, virtual reality patient scenario learning. Maintaining equipment and ordering and recycling resources is also a big part of what I do. I have also taken on some administration tasks such as planning for graduation which I have done for a couple of years now, with COVID-19 I needed to think differently about my job, and this was one way I could help out the team.

I am the Health and Safety representative for School of Nursing, which is part of the greater Otago Polytechnic Health & Safety (H&S) group which involves monthly audits and ongoing education and training. Part of this is ensuring that all staff and students meet the H&S requirements via online leaning modules, practical application of the principles and to improve understanding around how we must all be involved in safety

What do you like most about the work you do?

I am a practical person, so I like that it is hands on and that the work is varied. I do like to find solutions to make things work well. One of the best parts is working with the students, I get a lot out of being part of their transition from the early days and the introduction that I do for new students to laboratory environment then watching them progress and seeing them through to graduation.

What are the major challenges for you in your work on a day-to-day basis

Keeping on top of the needs of the educators and understanding what they want from you when you are not a nurse, also getting the students to see the clinical laboratory as a ward/workplace through hygiene, safety, safe practice, thinking about others and really starting them to think about their role. Acquiring resources for the labs over the last three years has been challenging. Throw away of resources has been historic but the supply chain has meant a change of mindset to what can we reuse. Other things such as Personal Protective Equipment have to be a bit more realistic for students to understand the importance.

Money is the key really, with over 450 nursing students at any one time we spend a lot on lab resources, maintaining, and repairing equipment and looking at new ways to compliment the teaching, for example I have just purchased 10 new thermometers to replace older models through attrition, $3,387.50. It's not cheap to teach our up-and-coming nurses!

One of the biggest challenges has been the manikins and simulators that are used as patients in teaching. When I came here manikins were kept in the beds, but new ways of teaching meant that the lecturers needed the beds free for a lot of lessons. The manikins needed to go into and out of storage depending on what was needed, this meant hoisting manikins that weigh around 40kg in and out of beds onto chairs and then sometimes moved out of the labs altogether. They are dead weight but need handling with care due to the electronics.

Can you describe how you managed one of these major challenges

The manual handling of the manikins became a health and safety concern because of their weight, the number of times they needed moving, and the way we were moving them. They need to be lifted like they are a human but one with no control of their limbs, these can flop around and cause damage. It is not a one-man job. I proposed that a little used meeting room be converted to a storage room for the simulators/manikins and other larger items we were constantly moving around in the labs as they were always "in the way".

I commandeered shipping boxes, two lab plinths, a table, and a large storage case to use as temporary beds/storage units for our six simulators and three manikins. We were however still having to move them constantly in and out of this room to the labs through the corridors. We were managing this by using the storage plinths and a minimum of two staff, more staff if we needed all six Simulators to be placed in the labs.

Figure 2. The storage room with the wrapped manikins on table and plinths beforehand arrival of the storage unit. Source: Sharon Buchanan-Letts (published with permission).

I had a think and brainstorm about how we could do this differently and had some initial ideas but no real way of working it through without the skills of others. So, I spoke to Adam Liberatore an engineering lecturer and asked if I could propose a project and he suggested presenting it to some engineering students with a view to designing and making a manikin storage and transport unit to making handling and storage of the manikins safer and more efficient. A unit that took up less space, stored several manikins/simulators easily but also could be used to move the simulators around safely.

After the presentation, I met with two students, Luke Howard and Lily Davies who were keen to take this project on. We discussed what was needed and off they went. We had a reality goal which took in cost, time, and what was really feasible and then there was the gold goal which included power plugs, covered shelving, sliding shelving, the sky was the limit if we had the money!

I met with them to discuss progress, ask, and answer questions, measure the manikins and look through the labs to make sure that what we were going to have in the end would do the job. On one of these occasions, I suggested that if we were able to get our hands on an old, powered plinth we had in storage, would they be able to make this unit power driven? Off down to the storage shed and there we dug out an old, dusty plinth which became the frame for the unit.

You have been working with staff and students from another school at Otago Polytechnic for this project. Can you tell me how you found this.

Adam Liberatore the lecturer in engineering was great to work with, he could see the value and how it would work as a student project. He also suggested tweaks and how it could be revisited by students in the future to look at improving the prototype.

The two students mentioned earlier were great to work with, they listened to what I wanted. They were invested in the project as it was an assessment for them but that wasn't their only drive, they could see how useful this would be in application. I still remember the day Luke Howard came over from the engineering school to borrow an old non electronic manikin, I wrapped it in a sheet, and he hoisted it over his shoulder like a fireman and off he went back to the workshop across campus to make sure the dimensions were right.

What was the most satisfying part of this project.

The finished product was put on display in The Hub on Otago Polytechnic campus as part of the engineering student's exhibition.

Figure 3. Manikin storage unit on display in The Hub.
Source: Sharon Buchanan-Letts (published with permission).

Figure 4. Poster displaying manikin storage and transportation design. Source: Luke Howard and Lily Davies (published with permission).

It was great to see people asking questions and talking with the students and their poster that they had developed to show their work. The second part was getting it upstairs, it didn't fit in the lift so was brought up the stairs in two pieces by campus services. It was plugged in and the manikins wrapped and loaded in. It worked!

Figure 5. Manikin stage unit in place with the manikins wrapped and loaded.
Source: Sharon Buchanan-Letts (published with permission).

The other part was how cost effective this was. We repurposed the old plinth which would have been scrap, the other materials were relatively cheap, and the students time was accounted for in their learning.

Is there anything you would have done differently?

We identified several areas of potential improvement mainly around the technical aspects which the students identified. These included making the trolley section lower to the ground to improve visibility when moving, stronger hydraulics to raise and lower faster. Using an alternative to the plinth as the base as it only can move ~50cm vertically so does have some limitations height wise

You received the Otago Polytechnic Health and Safety award for this initiative, how has this made you feel about approaching further challenges?

It made me feel that I could make a difference as a contributor to the school, and it gave me the confidence to tackle challenges and find solutions. It also gave me an insight into the wide variety of professional skills within Otago Polytechnic that you can tap into. We have some really skilful people that can see potential in the ideas of others. It has been great to connect with a completely different school, expanding relationships and nurturing and developing ideas while working through to reach a meaningful outcome.

The financial part of this award I bought myself a pair of shoes and trousers to use in the labs as a uniform, promoting professionalism. The remainder of the award I put towards an E-Bike for my own Health and Wellbeing, we have to be self-sustainable too!

Thank you Sharon it has been a pleasure hearing about your innovative thinking and how you put this into practice.

Sharon Buchanan-Letts is the Clinical Technician with the School of Nursing at Otago Polytechnic. She was born in Dunedin, but did most of her growing up in Cromwell, Central Otago. She now resides on a lifestyle block in Mosgiel with her husband and daughter who is a second-year Nursing Student. Her son lives in Nelson and Cromwell. Sharon is an avid sports enthusiast, trying most sporting avenues herself, but her passion is for Netball and Squash while also being a supporter of her children's sporting and life achievements.

Karole Hogarth https://orcid.org/0000-0002-5764-6289 JP, RN, BSc, PhD, SFHEA UK is an Associate Professor and Head of Nursing at Otago Polytechnic. She is a registered nurse with a PhD in Anatomy with research interests across science courses, Māori learner success and interprofessional education which produces collaborations both nationally and internationally across health disciplines.

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THE HEALTH DISCOURSE BLOG

Jean Ross and Lesley Brook

In late 2018 Otago Polytechnic launched a new blog to add to the variety of our channels for the dissemination of research. We provide a platform that encourages discourse about health and wellbeing from the perspectives of many health disciplines. The aim is to improve health practice and hence the health and wellbeing of individuals, family/whānau and communities. The blog is open for contributions and comments. It can be read at healthdiscourse.nz

At the start of 2021, Associate Professor Lesley Gill, and Lesley Brook joined one of the original editors (then) Associate Professor Jean Ross as co-editors. The new team decided to take a transdisciplinary approach. We began a series of blog posts that engaged with the United Nations' 17 Sustainable Development Goals as inspiration and structure for contributors to discuss a wide range of implications for health and wellbeing.

The Sustainable Development Goals (SDGs) (United Nations, 2019) were developed in 2015 with a focus to transform our world with a focus on sustainability by 2030. These goals are important for us all to pay attention to in our everyday life, activities, and plans. The links between these goals are both implicit and explicit. Health is a significant example depicted in SDG 3 Good Health and Wellbeing as well as an implicit component of Goals 2, 6, 11 and 12. The broad focus of the SDGs assist us to coordinate the different interests of colleagues; mobilise collective action and "help create shared global understandings about the issues and problem at hand" (Monkelbaan, 2019, p. 4).

We have also been using Te Whare Tapa Wha, a holistic model for wellness from a Māori perspective developed by Sir Mason Durie. This four-sided house provides blog post writers with four lenses to examine some of the health and wellbeing implications of each SDG. This model focuses on wellness as a four-sided whare or house. Each of the four sides of the whare are representative of four aspects of health and wellness, first, taha wairua (spiritual health), second, wairua, the role of the whānau (family) and third the balance of the hinengaro (mind) are as important as the fourth side of the whare-physical manifestations of illness (Te Whare Tapa Wha).

We invited a wide range of contributors from diverse disciplinary backgrounds to each contribute a short post of about 500 words. Most but not all contributors are staff of Otago Polytechnic Ltd because of the breadth and variety of our research and expertise. For each invited contributor, we nominated one SDG and one aspect of Te Whare Tapa Whā which we asked them to be guided by in thinking and writing for their contributed post. We were often able to add an explanation about why we were inviting this person to write on this SDG.

We gave each contributor a deadline and asked them to follow the writing style for the blog:

1. The first paragraph needs to comment on the dual theme for your post, i.e. the SDG and the wellbeing lens that we have asked you to use.
2. Your writing may be informed by your own or others' research but doesn't have to be.
3. Your writing may include personal reflection but does not need to.
4. You need to include one or two images or figures that are relevant to the content of your blog which you have permission to publish and refer to those images in your text.
5. You may include recommendations in your conclusion.
6. Please identify references in your text, e.g. by numbers or author/date, then list references in full at the bottom of your post.

This writing style allowed for a variety of voices to emerge, contributing to a rich discussion. Contributions are copy-edited by one of the co-editors on a monthly rotation. On occasion we will ask a contributor to further develop an aspect of their post. We have also upon request given feedback on draft posts.

We have been publishing posts on one SDG per month sequentially, beginning with SDG 1 in March 2021, with a break after November 2021 before starting again in April 2022. For each SDG we publish an introduction, four contributors' posts – one on each of the four aspects of wellbeing – and a reflection, which usually includes a call to action. Each contributed blog post has a suitable image, and a short bio of the contributor. Each contribution is tagged to the relevant SDG, the aspect of wellbeing from Te Whare Tapa Whā, and the type of content – whether it is research, report, or commentary.

Our focus has deliberately been on the publication of engaging content that is relevant to Aotearoa New Zealand. We link to the blog from Otago Polytechnic social media accounts and encourage our contributors to do so also with their own blog posts. We welcome more subscribers and comments on the posts to contribute to this discourse.

Jean Ross https://orcid.org/0000-0003-2467-9233 is a Professor of Nursing. Jean is also an advocate for sustainable rural community development and nurse education. Jean is one of the team members who originally set up the Health Discourse Blog. Jean's focus is research directive which both informs and directs her practice.

Lesley Brook https://orcid.org/0000-0001-6678-5179 is Research Projects Coordinator at Otago Polytechnic, Te Pūkenga – New Zealand Institute of Skills and Technology. Her research interests are in achieving and evidencing impact from research. To that end she is actively involved in the publication and dissemination of Te Pūkenga research, including as co-editor of the Health Discourse Blog.

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REFERENCES

Creative Commons. https://creativecommons.org/licenses/by-nd/4.0/

Health Discourse Blog. https://healthdiscourse.nz/

Monkelbaan, J. (2019). *Governance for the sustainable development goals: Exploring an integrative framework of theories, tools, and competencies.* Springer Nature; Singapore.

Te Whare Tapa Wha. https://www.health.govt.nz/our-work/populations/maori-health/maori-health-models/maori-health-models-te-whare-tapa-wha

United Nations. (2019). Sustainable development goals. https://www.un.org/sustainabledevelopment/sustainable-development-goals/

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NATURE – NURTURING HEALTH AND ENHANCING SUSTAINABILITY THROUGH ADVENTURE THERAPY PRACTICES

Helen Jeffery

INTRODUCTION

Adventure therapy is a flourishing and diverse field of health and wellbeing, generally including elements of experiential learning, outdoor pursuits or activity, and intentional use of nature. The intent of most adventure therapy programmes is to effect a change in terms of personal and social development, and mental health. A mixed methods study into adventure therapy practice in Aotearoa New Zealand was conducted to better understand the beliefs and practices of practitioners.

Thorne's (2000) interpretive description framed analysis of data which was gathered through focus groups and a survey. The research is situated in the field of adventure therapy and analysis incorporated knowledge from diverse but related disciplines to construct findings that would be of pragmatic use to adventure therapy practitioners in Aotearoa New Zealand.

Findings were not limited to but include ways that practitioners witness therapeutic impact from nature, these are discussed in this work. Nature related themes are *nature enables health, nature enhances therapy* and *connection with nature is important*. These are discussed with a view to establishing benefits of nature in terms of the concept of sustainability and linked with Ives et al. (2018) types of connection with nature: material, experiential, cognitive, emotional, and philosophical. It is proposed that strengthening these connections enhances sustainability on a personal level, encourages environmentally responsible behaviours and falls within legitimate adventure therapy practice in Aotearoa New Zealand.

Literature review

Whilst the Adventure Therapy (AT) field is diverse and lacks an internationally consistent definition, there are consistencies regarding what is included in AT practices. One such consistency is that the intervention is situated in nature, endorses connection with nature, and uses the health-giving benefits of nature (Harper et al., 2019).

Research into the health benefits of spending time in nature is growing both in the number of studies, and support for the hypothesis that nature is good for us (Harper et al., 2019; Seymour, 2016). Situating AT activities in nature provide opportunity for exercise and whole-body movement, and for involvement of all senses with stimuli that is both engaging and restorative. Resultant benefits are physiological, psychological, and social.

Seminal theories from Western research on the interaction between nature and people include biophilia theory developed by Wilson (2007) and the Kaplans Attention Restoration Theory (Kaplan, 1995). Research into nature's influence on humans' health has been prolific in recent years (Ives et al., 2017; Zylstra et al., 2014) and is informing health, education and environmental disciplines. Völker and Kistemann (2011) review of literature

about the health benefits of blue spaces (ocean, rivers, lakes, water features) found that overall benefits were clear however specific emotional and therapeutic benefits of blue spaces requires more research. A subsequent review by Gascon et al. (2017) found evidence of blue space benefits to mental health and wellbeing, and physical health through the promotion of physical activity often associated with water. These authors suggest evidence is strong enough to promote inclusion of blue spaces in planning urban environments, however, acknowledge most blue space research is recent and requires methodological improvements and more focus on standardise outcomes measurements.

The systematic review conducted by Kondo et al. (2018) explores the place of green space (forest, gardens, grassland, mountains) in health and wellbeing. They found a clear correlation between green space and enhanced attention, mood, and physical activity. Additionally, there was evidence of reduced heart rate, reduced mortality, and violence. These authors advocate for more studies with rigorous design regarding therapeutic use of green space and state the findings may assist in urban planning for protection and inclusion of green spaces in urban environments. Hansen et al. (2017) extensive review of research into the Japanese practice of Shinrin-Yoko (forest bathing) provides compelling evidence of the physiological relationship between people and plants and the health benefits of this. Theses authors conclude that exposure to nature is implicated in reduction of stress from modern day lifestyles and technology.

Despite AT having its roots in nature (Newes & Bandoroff, 2004) research into the intentional use of nature in the field has been slow to emerge. Beringer and Martin (2003) identified that AT outcomes were overall attributed to program design and facilitation, and that the field would benefit from better understanding the place nature has to play in therapeutic effect. They called for a shift from anthropocentric (where humans are regarded as central to existence) to an eco-centric or nature centred values perspective in AT practice. Beringer (2004) suggests including ecotherapy and nature-based therapy principles in AT. The need for increased acknowledgement of the place of nature in AT is reiterated by Taylor, Segal, and Harper (2010) who propose use of integral systems theory as a framework to understand, justify and apply nature in AT practices. Richards et al. (2011) succinctly draw together theoretical frameworks used in diverse AT practices, and include nature-based practices, stating that "these approaches reflect a greater emphasis on a connection with the natural world as a key therapeutic ingredient, along with a response to environmental crises and sustainability agendas." (p.84).

Adventure Therapy in Aotearoa New Zealand is growing in profile, and practitioners come from diverse professional backgrounds across health, education, and youth work fields (Jeffery, 2017). To date there has been limited research into the use of nature in adventure therapy practice in New Zealand (NZ). Jeffery (2017) encouraged the use of nature by occupational therapists using AT through various avenues including horticulture and animal assisted therapy and endorsed working alongside Māori to include nature-based interventions for Māori. Horn's (2021) study into the use of nature by talk-based therapists found that therapeutic alliance was enhanced because of the setting, therapists facilitated connection with nature as healer, and there was a good fit with Māori.

This work reports on one theme (use of nature) that emerged from a broader study into what AT practitioners are doing in NZ with a purpose of better understanding their beliefs and practices (Jeffery & Hensey, 2022).

METHODOLOGY

A mixed methods study was conducted to ascertain the current beliefs and practices of AT practitioners in NZ. The breadth of the research question "What are AT practitioners in NZ doing, and how and why are they doing it?" reflected current flourishing of the field in NZ and the limited amount of research already conducted. Interpretive description methodology was selected (Thorne, 2016) which uses a constructivist approach to generate knowledge pertinent to the health field of interest. This approach seeks findings that are relevant to the field of interest, attends to practice based biases and commitments, and holds the context in mind. The intent

is that findings are constructed through thoughtful linking to others' work in the field (Oliver, 2012; Mitchell & Cody, 2002; Thorne, 2000).

Ethics approval was granted by the Otago Institute of Sport, Exercise and Health Ethics Committee, Otago Polytechnic, Dunedin in 2019. Participants were recruited through Adventure Therapy Aotearoa via email communication, snowballing was used to further recruit.

Data was gathered via four focus groups with a total of 12 participants. For one of the groups only one participant was able to attend, to capture this person's responses an interview was conducted. Identifying data was anonymized at the point of transcribing and pseudonyms allocated Additionally, an anonymous survey was distributed via the same networks and resulted in 29 valid responses. This added information pertaining to the systems practitioners are working in and what is important to them in AT practice.

Qualitative data was thematically analysed, with interpretations explored by the primary researcher, a second researcher and a research assistant. Survey data was analysed using SPSS (Statistical Package for the Social Sciences, version 27) software and descriptive findings were used to augment, expand on, and compare with the qualitative findings.

Following this analysis and in line with interpretative description's approach to valuing participants shared and diverse experiences, themes and anomalies related to nature were returned to and further explored. Jeffery and Hensey (2022) reported on the overall findings and implications for the field. This work reports on and explores findings that emerged about the use of nature in adventure therapy which are discussed in relation to the concept of sustainability.

Findings

The following findings analysed from the data are presented in three themes.

- *Nature enables health*

Participants identified health and wellbeing benefits to the individual from spending time in nature. These include experiencing positive emotions such as a sense of calm, freedom, an overall sense of wellbeing, enhanced cognitive capacity and increased sustainability of benefits of the therapy following the episode of care. Reasons for this were attributed to individuals' disengaging from technology and being away from the urban environment, as well as the high support model present in many AT programs. Some noted that clients were able to gain a more helpful perspective on life issues, and to make better use of reflective and learning opportunities than when engaged in therapy in a clinic setting as exemplified by the following participant:

> *I think it's the removal of oneself from the four walls around us, from what we know, from technology. From that into this ... feeling of freedom? Carole.*

- *Nature enhances therapy*

Additionally, participants identified that therapeutic strategies were easier to facilitate and had better outcomes when conducted in nature. Much of this related to capacity for emotional regulation, which in turn enhances capacity to sustain cognitive function. It was identified that strategies such as mindfulness and grounding (being present in one's body and connected with the earth) come easier when in nature with multiple senses being engaged in a neutral and natural environment. Others spoke to a deeper response to immersion in nature which enabled clients to reach therapy potential, exemplified by the following participant:

> *There's something about doing stuff outside that just makes it better, makes it more ... There's kind of a spiritual and element to being around water or around a natural setting that enables stuff to happen. Bronnie*

Many adventure therapy clients have a history of exposure to adverse childhood events and consequently suffer complex trauma symptoms with lifelong effects on development and overall health and wellbeing. An emphasis on safety (physical and emotional) is therefore essential in AT practice. Participants reported this could sometimes be facilitated easier in nature. Whilst many adventure therapy practices intentionally use novel environments and activities, participants in this research also identified a sense of safety and comfort with nature that grows with increased familiarity. Some helped clients identify a place they could go to when necessary to cope with stressors and regulate emotions in the hopes they would sustain this practice once therapy had finished, others intentionally selected the same place for each session to initiate familiarity.

- *Connecting with nature is important*

Connection with nature was considered important for spirituality, for the sense of place and belonging it can provide, for safety and consistency of the relationship with nature once established, and for the potential for reciprocity – receiving from and giving back to nature exemplified by the following participant:

> *I think it's also something greater than yourself, to go out there and be wowed by some beautiful place. Or yeah, just feel that sense of something bigger than oneself. And also, that ... I think that sense of wonder. Carole.*

Having a sense of awe and wonder, and of being a part of something greater, when present in and mindful of natural environments not previously appreciated is often encountered by clients in adventure therapy:

> *... and I guess culturally whether there's a cultural element to feeling more grounded to particular places or land, whatever it might be. I think everybody kind of feels that sense of some kind of connection with the natural, yeah, world around them. When you're actually given the chance to. Erica*

Connection to place and the associated sense of belonging featured strongly in participant statements. This was in part attributed to the number of clients in services that use adventure therapy who are experiencing disconnection from family/whanau and from society, who may be geographically transient and be disconnected from nature. Some participants identified differences between a Western view of using nature and a Māori view of being a part of nature but did not differentiate between cultures when talking about the value of facilitating connection with nature. Whilst not stated overtly, it seemed participants valued and worked with the viewpoint of indigenous ways of being and appreciated the potential contribution to the field from Māori perspectives, as illustrated by Henk's comment:

> *There's some fantastic stuff going on that isn't yet covered by us... Anyway, I think they [Māori] have a huge amount to offer us…*

Strategies identified to facilitate connection were numerous and included talking about the geographical and social history of the place, helping people situate their whanau/family history in place, using local green and blue spaces regularly to facilitate familiarity, and selecting activities that are accessible for clients to integrate into everyday life and sustain over time.

Relationship and connection are enhanced by knowing, respecting, and appreciating the other. In terms of connection with nature, some participants used activities that enable appreciating changes in nature over time such as gardening, and photography through the seasons. Others included education on how things work in nature, such as how clouds are formed, and drawing attention to specific elements such as observing the night sky – these activities were used as a way of triggering respect for nature and hope that willingness to care for nature would ensue. Knowledge and practices in both Kaitiakitanga (environmental stewardship) and environmentalism were considered important outcomes that some practitioners strived for.

DISCUSSION

Respondents in this study identified connection with nature in terms of enhancing wellbeing, enabling better engagement with therapy, and a perception of being part of something bigger. In line with Thorn's (2016) analysis strategy of linking findings to the work of others in the field, these findings are discussed in relation to research into connecting with nature from multiple disciplines including education, conservation, environmental psychology, ecopsychology and health. Additionally, Ives et al. (2018) framework for strengthening connectedness is used. A link is made to individuals' capacity to sustain meeting the demands of everyday life, and to individuals' engagement in environmentally responsible behaviours.

The human-nature connection

Participants in this study identified disconnection from nature as a cause of some of the struggles for many, as well as connecting with nature as therapeutic. Zylstra et al. (2014) defined this concept as …" a stable state of consciousness comprising symbiotic cognitive, affective, and experiential dimensions that reflect a realization of the interrelatedness between oneself and the rest of nature" (p. 119). This definition speaks to the importance of the connection being beyond intellectual knowing and incorporates concepts of nature being around and within ourselves, something we embody (Stevens, 2010). Biophilia theory, belief that humans are genetically predisposed to be in nature (Wilson, 1984) explains the innate drive people have to engage with nature and the physiological responses to nature which are directly linked to safety, survival, and identity. Changes over recent centuries through the agricultural, industrial, and technological revolutions has created distance between our "selves" and the natural world (Ives et al., 2018; Beery et al., 2015). This is evidenced by shifts in attitudes and beliefs about nature, and by the harm being done to our external (nature) environment and our internal (self) environment. A call for reconnection with nature is driven by our increasing tussle with the demands that we now place on our natural environment (in the form of pollution and exploitation of resources) and the subsequent impacts on our health and wellbeing as individuals (social, physical, and emotional health) and as a species (due to environmental/climate crisis, food inequity etc) (Gabrielsen & Harper 2018; Beery et al., 2015; Zylstra et al., 2014).

In their systematic synthesis of research on the human-nature connection, Ives et al. (2017) identified three groups of research – human-nature connection *as mind, as experience* and as *attachment to place*. This review and Ives et al.'s subsequent (2018) work helpfully frames connecting with nature in five dimensions:

> (1) material connections such as resource extraction and use; (2) experiential connections such as recreational activities in green environments; (3) cognitive connections such as knowledge, beliefs and attitudes; (4) emotional attachments and affective responses; and (5) philosophical perspectives on humanity's relationship to the natural world.
> (Ives, 2018; p.1389)

Ives (2018) suggests that pragmatic efforts to strengthen connections in these domains has potential to facilitate change for sustainability at an individual and societal level.

Findings from this study are compatible with this framework. Participants referred to material connections with reference to potential for enhanced appreciation and practice of kaitiakitanga (management of the natural environment based on Māori worldviews) (Walker et al., 2019). They used experiential connections in their work, emphasised emotional attachment in terms of therapeutic benefit and openness to therapy, spoke of enhancing cognitive connections through information sharing and were open to exploring philosophical perspectives through appreciation of and work within both the Māori and non-Māori world views.

The health-nature connection

Early exploration of the health benefits of nature by Kaplan (1995) resulted in development of their Attention Restoration Theory. This proposes that spending time in nature ameliorates much of the fatiguing demands of urban living. Modern life often requires unsustainable time with and levels of intensely directed attention on a specific task or experience at the expense of awareness of other sensations from or features of the immediate environment. Kaplan (1995) theorises that nature environments require undirected attention whereby the full experience of being present in the environment is enabled and ultimately capacity for directed attention, when it is next required, is restored.

Health benefits of connection with nature are diverse, well represented in literature, and can often be linked to Kaplan's Attention Restoration Theory. Masterton et al. (2020) comprehensive realist review of literature from diverse disciplines ascertained underlying mechanisms and processes whereby green space can improve mental health. Initial theories regarding the health benefits of nature fell into three broad themes – *nature* (benefits from getting away from everyday life and time to reflect), *individual self* (benefits from physical activity and to self-efficacy and having a purpose) and *social self* (through relationships and shared experiences). These authors propose a model to depict contexts, mechanisms, and outcomes for each of the three themes, thereby illustrating the importance of the program and its facilitation alongside the use of nature. These findings are in line with Britton et al. (2020) who reviewed literature on the therapeutic benefits of blue space and found that the positive mental health outcomes were attributed to activities conducted in blue space along with the qualities of the blue space.

Indigenous perspectives link the health of the natural environment directly to the health of people – sustaining life is reliant on a reciprocal relationship between people and the rest of nature. Kiatiakitanga, a complex Māori philosophy and practice, incorporates environmental stewardship with place based connection. Walker et al. (2019) suggest that capacity for kaitiakitanga (and in turn the health of the environment and the people) is compromised by urbanisation and modern living. They propose promoting and supporting indigenous wisdom, including kaitiakitanga knowledge and practices, to manage ecosystems and influence urban planning to ameliorate damage done to nature (including people) by intense urbanisation.

The adventure therapy-nature connection

Emphasis on the activity as well as the natural environment evident in our study is in line with usual AT practice. Outdoor activities are used with an emphasis on experiential learning theory to underpin planning and facilitation (Harper et al., 2019). Additionally, whilst some practitioners work on a one-to-one basis, groupwork is more commonly included. Therapeutic benefit has been attributed to the natural environment, the activities that clients engage in, skilled facilitation, and socialisation that occurs within the group (Gabrielsen & Harper, 2018; Jeffery, 2017; Taylor et al., 2010; Mossman, 2005). Participants in this study integrated their use of nature into facilitated activity and emphasised the importance of these other elements as much as connection with nature.

For many living in urban environments, experiences in nature are often through recreation activities such as outdoor pursuits, accessing city green spaces, or through gardening, and relates to Ives et al.'s (2018) domain: *experiential connections in nature*. Strengthening this can be facilitated through ensuring the experience is positive and safe, and it is processed so that learning is cemented (Luckner & Nadler, 1995). Although AT often uses novel activities and environments, this domain would be strengthened for individuals through repeated use of specific environments to enhance comfort through familiarity (Horn, 2021; Harper et al., 2019). Additionally, use of experiences with naturally occurring groups (e.g., community gardens, outdoor clubs) enhances potential for the human-to-human connection this client group often needs. Habitual use of such activities and environments would likely enhance enduring and sustainable benefits from them.

The way AT in NZ is facilitated differs depending on the reason and mechanism of referral, the intent of the program and the qualifications of the practitioners. Participants in this study came from diverse settings, which likely explains different emphasis across Ives et al.'s domains. Facilitation by a therapist with the intent of helping clients process trauma is more clearly linked to *emotional attachment and affective responses* domain, these participants believed their work was made easier and was more effective when situated in nature. Facilitation by teachers, however, was more often aligned with *cognitive connections*, integrating connection with nature into education about the environment assisted students' capacity to learn (because of greater capacity for cognitive function) as well as their level of knowledge. These findings are in line with the Kaplan (1995) attention restoration theory, supported by Porges (2015) polyvagal theory and explained in emerging trauma informed best practice for AT (Carpenter & Pryor, 2020; Trundle & Hutchinson, 2020)

The culture-nature connection

Accepting that people are a part of nature and at the same time calling for connection with nature creates dissonance and in part illustrates the disconnect between Westernised and Indigenous views of connection with nature. To consider nature as a backdrop to activities, a resource to use or own, or something to endure or enjoy perpetuates an understanding that "it" is separate from "us" and are examples of Westernised views (Beery et al., 2015; Zylstra et al., 2014). This contrasts with a view of indigenous cultures whereby people are situated in and have a symbiotic relationship with nature (McIntosh, Marques, & Mwipiko, 2021; Moewaka Barnes & McCreanor, 2019; Moewaka Barnes, Eich, & Yessilth, 2018; Boyes, 2010). McIntosh et al. (2021) explain Māori connection with nature and its relationship to health through four specific nature environments (land, forests, waterways, and wetlands). Each has a part to play in providing health benefits (to all of nature including people) through complex relationships with history and tradition, spirituality, physical properties, nurturing and cleansing properties and a natural order of things that is ultimately a self-sustaining ecosystem of which people are a part. Whilst well beyond the scope of this discussion, acknowledging the depth of Māori and the centrality of connection with nature to Māori culture is important. These disparate views on connection with nature (Māori and Western) illustrate the relevance of Ives et al.'s dimension of *philosophical perspectives on humans' relationship with nature*. Participants in this study emphasised connection with nature for Māori in terms of cultural identity and connection with place, acknowledging that Māori have much to offer the field of AT.

Research on the connection between humans and nature has been biased towards western cultures. The top three of the countries represented in Ives et al.'s extensive 2017 literature review are colonised countries with indigenous and non-indigenous people co-habiting the lands (USA, Australia and Canada) however the research maintains a Western orientation. The researchers acknowledge this limitation and recommend research from other countries be conducted to extend the cultural framing beyond western. McIntosh's (2021) statement that "Western cultures could learn much from the deep ideological connection between landscape and health by adopting the principles and knowledge of Indigenous peoples" supports this need. Similar messages are emerging in literature form other colonised nations. As more is known about the disruption caused by distancing people from nature, the advantage indigenous culture hold in this space is appreciated. Perhaps one way to facilitate connection with nature within AT in NZ is to continue to build relationships between indigenous and non-indigenous partners and for each to influence further development of the field.

Reciprocal human-nature connection

One of the benefits of connection with nature identified in this study was the potential for reciprocity – receiving from and giving back to nature. This considers the *material* domain in Ives framework by including that people give to and take from the environment materially (e.g., sustainable gardening for food), and was alluded to by some participants in this study. The notion of reciprocity between people and nature requires that people are in a "relationship with" or "connected to" nature and assumes that their actions will consequently be environmentally responsible. Leopold's famous Land Ethic includes the belief that "...We abuse land because

we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect" (cited in Beery, 2015, pp. 203–204). Diver et al. (2019) consider a reciprocal relationship between people and the land to be "based on our ethical obligations to care for, restore, and protect the land and resources that, in turn, support our existence" (p.404). These authors advocate that place-based relationships can form over time through experiences in the place, and nurture attachment with place. Connection with nature is therefore argued to be a valuable precursor to motivation for increased engagement in environmentalism (preservation, restoration, or improvement of the natural environment) (Merriam-Webster, n.d.) and conservation (planned management of natural resources to prevent exploitation, destruction, or neglect) (Merriam-Webster, n.d.). As also highlighted in this study, connection with nature, can help individuals and communities develop a deep sense of connection and belonging to place and community. Focus on this element strengthens Ives et al.,'s domains of *emotional attachments and affective responses,* and ultimately *philosophical perspectives on humanity's relationship to the natural world.*

Application of Connection with nature to Adventure Therapy

Suggestions for application of Ives et al.'s ways of connection to nature are presented in Table 1 and are intended as a trigger for further thinking about how AT practitioners in NZ can contextualise this material to their setting and situation.

Table 1. Application to Ives et al. (2018) Ways of Connecting with Nature.

Domain	Potential within Adventure Therapy practice.
Material connections e.g., resource extraction and use	Role modelling environmentally responsible behaviours Incorporating environmental values in full values contract Include connection with horticultural programs and practices Nurture reciprocity in relationship with nature Raise awareness of/link with local conservation and environmental activities Raise awareness of local historical and current resource use
Experiential connections e.g., recreational activities in g,reen environments	Maintain experiential and activity base to programs Situate programs in outdoor green/blue spaces Ensure activities are appropriate for the culture of the group and the place Facilitate awareness of nature as integral to the experience, not just the backdrop, connection to whenua Aim to normalise activity in nature – introduce local and accessible nature resources, incorporate local outdoor clubs Advocate and facilitate equitable access to nature
Cognitive connections such as knowledge, beliefs and attitudes	Integrate place-based education e.g., geography, social history (Māori and non-Māori perspectives), environmental and geographical history, flora, and fauna Strengthen knowledge of whakapapa Explore diversity in beliefs about nature Role model positive attitude towards use of and protection of nature resources Facilitate learning of local nature resources/places Promote independence in intentional use of nature.

Emotional attachments and affective responses	Acknowledge and relate to turangawaewae and topophilia Return to the same place, promote familiarity and comfort Acknowledge and develop capacity to process and manage emotions stimulated by nature e.g., awe, wonder, calm, anxiety, discomfort. Stimulate positive emotions through the nature and social environment of the group Use nature as healer/co-regulator to enhance therapy outcomes e.g., with mindfulness and grounding Support emotional connection to place, whakapapa Promote use of nature every day for emotional regulation and sense of wellbeing
Philosophical perspectives on humanity's relationship to the natural world	Appreciate te ao Māori (world view) and mātauranga Māori (traditional knowledge) Understand and maintain cultural safety e.g., follow tikanga Explore Māori and non-Māori perspectives – promote/enhance awareness and understanding of beliefs Explore and celebrate diversity in perspectives

Key points to consider:

- How nature is understood and related to is culturally bound. Māori nature-based philosophies and practices have much to offer non-Māori or Westernised communities.
- Connection with nature enhances health, enables therapy, and facilitates capacity to sustain the demands of the modern world.
- Connection with nature creates potential for reciprocal relationship with and consequent care about and for the natural environment.
- Intentional strengthening of Ives et al.'s five domains of connection with nature (material, experiential, cognitive, emotional, philosophical) is within the legitimate scope of AT practice in NZ

CONCLUSION

Ives et al. (2018) state that "To meaningfully progress a "reconnection agenda", tangible actions must be directed towards specific changes, whether in health, education, or conservation." Adventure therapy practice in NZ is across diverse settings that include health and education sectors. There is potential for strengthening each of the domains outlined by Ives et al through thoughtful and intentional use of nature in AT practices.

Such intention would enhance sustainability in individuals and groups to meet the demands of modern life, sustainability in communities to form and maintain reciprocal caring relationships with nature, and ultimately sustainable use of resources. Additionally, the experiential and place based nature of AT in NZ is well situated to meet Zylstra et al. (2014) challenge:

> …we can no longer rest with the hope that CWN [connection with nature] may only be realized through intellect. At a minimum, experiential education for CWN [connection with nature] should encompass sensory awareness and emotional bonding through nature- and place-based immersion—indeed this might be the only way in which perceptions can be transformed. (Zylstra 2014 p.137)

Thoughtfully planned and intentionally facilitated use of nature in AT practice can be a pragmatic response towards ameliorating some of the direct effects on individuals from modern living and on communities from the current environmental crises.

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REFERENCES

Beery, T., Jönsson, K. I., & Elmberg, J. (2015). From Environmental Connectedness to Sustainable Futures: Topophilia and Human Affiliation with Nature. *Sustainability, 7*(7), 8837–8854. doi:https://doi.org/10.3390/su7078837

Beringer, A. (2004). Toward an Ecological Paradigm in Adventure Programming. *The Journal of Experiential Education, 27*(1), 51–66. Retrieved from http://search.proquest.com/docview/275035149?accountid=39660

Beringer, A., & Martin, P. (2003). On adventure therapy and the natural worlds: Respecting nature's healing. *Journal of Adventure Education & Outdoor Learning, 3*(1), 29–39.

Boyes, M. (2010). Re-envisioning nature from a New Zealand Māori perspective. *Encountering, Experiencing and Exploring Nature in Education,* 94.

Britton, E., Kindermann, G., Domegan, C., & Carlin, C. (2020). Blue care: a systematic review of blue space interventions for health and wellbeing. *Health promotion international, 35*(1), 5–69. doi:10.1093/heapro/day103

Carpenter, C., & Pryor, A. (2020). Adventure Therapy. In *Outdoor Therapies: An Introduction to practices, possibilities, and critical perspectives* (pp. 81–94): Routledge.

Diver, S., Vaughan, M., Baker-Médard, M., & Lukacs, H. (2019). Recognizing "reciprocal relations" to restore community access to land and water. *International Journal of the Commons, 13*(1).

Gabrielsen, L. E., & Harper, N. J. (2018). The role of wilderness therapy for adolescents in the face of global trends of urbanization and technification. *International Journal of Adolescence and Youth, 23*(4), 409–421.

Gascon, M., Zijlema, W., Vert, C., White, M. P., & Nieuwenhuijsen, M. J. (2017). Outdoor blue spaces, human health and well-being: a systematic review of quantitative studies. *International journal of hygiene and environmental health, 220*(8), 1207–1221.

Hansen, M. M., Jones, R., & Tocchini, K. (2017). Shinrin-yoku (forest bathing) and nature therapy: A state-of-the-art review. *International journal of environmental research and public health, 14*(8), 851.

Harper, N., Rose, K., & Segal, D. (2019). *Nature-based therapy: A practitioner's guide to working outdoors with children, youth, and families:* New Society Publishers.

Horn, A. (2021). The role of Nature in nature-based therapy: a qualitative study of therapists' perspectives.

Ives, C. D., Abson, D. J., Von Wehrden, H., Dorninger, C., Klaniecki, K., & Fischer, J. (2018). Reconnecting with nature for sustainability. *Sustainability science, 13*(5), 1389–1397.

Ives, C. D., Giusti, M., Fischer, J., Abson, D. J., Klaniecki, K., Dorninger, C., Laudan, J., ... van Wehrden, H. (2017). Human–nature connection: a multidisciplinary review. *Current Opinion in Environmental Sustainability, 26,* 106–113.

Jeffery, H. (2017). Playing it safe: Adventure therapy in New Zealand. Contemporary Research Topics *(Health & Wellbeing) Activity, 1*, 97–102.

Jeffery, H., Hensey, C. (2022). Exploration of adventure therapy community and practice in Aotearoa New Zealand. *Journal of Outdoor and Environmental Education* [in press] doi: 10.1007/s42322-022-00115-z

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of environmental psychology, 15*(3), 169–182.

Kondo, M. C., Fluehr, J. M., McKeon, T., & Branas, C. C. (2018). Urban green space and its impact on human health. *International journal of environmental research and public health, 15*(3), 445.

Luckner, J. L., & Nadler, R. S. (1995). Processing adventure experiences: It's the story that counts. *Therapeutic Recreation Journal, 29*, 175–175.

McIntosh, J., Marques, B., & Mwipiko, R. (2021). Therapeutic Landscapes and Indigenous Culture: Māori Health Models in Aotearoa/New Zealand. In *Clan and Tribal Perspectives on Social, Economic and Environmental Sustainability.* Bingley: Emerald Publishing Limited.

Masterton, W., Carver, H., Parkes, T., & Park, K. (2020). Greenspace interventions for mental health in clinical and non-clinical populations: What works, for whom, and in what circumstances? *Health & Place, 64,* 102338. doi: 10.1016/j.healthplace.2020.102338

Mitchell, G. J., & Cody, W. K. (2002). Ambiguous opportunity: Toiling for truth of nursing art and science. *Nursing Science Quarterly, 15*(1), 71–79.

Moewaka Barnes, H., Eich, E., & Yessilth, S. (2018). Colonization, whenua and capitalism: experiences from Aotearoa New Zealand. *Continuum, 32*(6), 685-697. doi:10.1080/10304312.2018.1525918

Moewaka Barnes, H., & McCreanor, T. (2019). Colonisation, hauora and whenua in Aotearoa. *Journal of the Royal Society of New Zealand, 49*(sup1), 19–33.

Mossman, S. E. (2005). *What works with youth? An evaluation of the Adventure Development Counselling programme.* University of Canterbury. Christchurch, NZ.

Newes, S. L., & Bandoroff, S. (2004). What is adventure therapy? In S. Newes & S. Bandoroff (Eds.), *Coming of age: The evolving field of adventure therapy* (pp. 1–30). Boulder, Colorado: Association for Experiential Education.

Oliver, C. (2012). The relationship between symbolic interactionism and interpretive description. *Qualitative health research, 22*(3), 409–415.

Porges, S. W. (2015). Making the world safe for our children: Down-regulating defence and up-regulating social engagement to 'optimise'the human experience. *Children Australia, 40*(2), 114–123.

Richards, K. (2015). Developing therapeutic outdoor practice: adventure therapy. In *Routledge international handbook of outdoor studies* (pp. 251–259). London, UK. Routledge.

Seymour, V. (2016). The human–nature relationship and its impact on health: A critical review. *Frontiers in public health,* 4:260. doi: 10.3389/fpubh.2016.00260

Stevens, P. (2010). Embedment in the environment: A new paradigm for well-being? *Perspectives in Public Health, 130*(6), 265–269.

Taylor, D. M., Segal, D., & Harper, N. J. (2010). The ecology of adventure therapy: An integral systems approach to therapeutic change. *Ecopsychology, 2*(2), 77–83.

Thorne, S. (2000). Data analysis in qualitative research. *Evidence Based Nursing, 3*(3), 68–70.

Thorne, S. (2016). *Interpretive description: Qualitative research for applied practice.* New York, USA: Routledge.

Trundle, G., & Hutchinson, R. (2020). The phased model of adventure therapy: trauma-focussed, low arousal, & positive behavioural support. *Journal of Adventure Education and Outdoor Learning,* 1–11.

Völker, S., & Kistemann, T. (2011). The impact of blue space on human health and well-being–Salutogenetic health effects of inland surface waters: A review. *International journal of hygiene and environmental health, 214*(6), 449–460.

Walker, E. T., Wehi, P. M., Nelson, N. J., Beggs, J. R., & Whaanga, H. (2019). Kaitiakitanga, place and the urban restoration agenda. *New Zealand Journal of Ecology, 43*(3), 1–8.

Wilson, E. O. (1984). Biophilia. In *Biophilia:* Harvard University Press.

Wilson, E. O. (2007). Biophilia and the conservation ethic. In J. D. Penn & I. Mysterud (Eds). *Evolutionary perspectives on environmental problems*, (pp. 249–257). London, UK: Routledge.

Zylstra, M. J., Knight, A. T., Esler, K. J., & Le Grange, L. L. (2014). Connectedness as a core conservation concern: An interdisciplinary review of theory and a call for practice. *Springer Science Reviews, 2*(1), 119–143.

https://doi.org/10.34074/scop.3007001

MINDBODY METHODS AND MASSAGE THERAPY FOR FIBROMYALGIA: A SYSTEMATIC REVIEW

Dave McQuillan

INTRODUCTION

Humans are social creatures. We are wired for social connection, and positive social interaction is one of the most effective buffers of stress (Woodward et al., 2018). People living with fibromyalgia often report becoming socially isolated. This is partially because the pain and fatigue of fibromyalgia can be disabling, and partially because of social judgement. The condition is rarely visibly apparent, symptoms fluctuate, and people living with fibromyalgia often need support. Social withdrawal is a common strategy to avoid the risk of being seen as unreliable or a burden (Arnold, et al., 2008). Given that stress is a contributing factor to fibromyalgia, this lack of social enjoyment can result in a vicious cycle. When individuals don't receive the relief of social interaction, negative feelings can intensify. This review investigates the use of mindbody methods in reducing stress and neural wind-up. Reducing neural wind-up should theoretically reduce the symptoms of fibromyalgia syndrome, helping individuals engage in fulfilling interaction and activities.

Fibromyalgia is a condition characterised by chronic, widespread pain and tenderness. Other symptoms include disrupted or unrefreshing sleep, exhaustion, and "brain fog" (Häuser et al., 2015a). In recent years a consensus has emerged that fibromyalgia syndrome is a manifestation of central nervous system sensitisation (Hawkins 2013; Van Houdenhove & Egle, 2004). Others have established neurogenic and fascial inflammation as components of the disorder (Littlejohn, 2015; Liptan, 2009). Pharmacological treatments only provide a modest reduction in symptoms, which is often not long-lasting (Häuser et al., 2015a). There is therefore a need to find efficacious non-pharmacological treatments.

Mindbody therapy shows promise for the management of fibromyalgia, firstly because it aims to reduce the level of nervous system wind-up; and secondly to relieve the somatic impact of trauma. Neurological wind-up is central to the development and maintenance of fibromyalgia (Hawkins, 2013). Trauma occurs when an experience is too overwhelming for an individual to deal with (for example, physical or mental abuse, neglect, or social shame). Dissociation from painful emotions becomes reflected in habitual patterns of neuromuscular tension and behavioural avoidance (Levine, 2010; van der Kolk, 2003). Trauma is a common aetiological factor for the development of fibromyalgia syndrome (Häuser et al., 2015b). The experience of early childhood trauma has been linked to the development of chronic pain and inflammatory illness later in life (Edwards et al., 2016; Danese et al., 2007).

METHODOLOGY

This literature review outlines the positive evidence for using mindbody and massage therapy methods in treating fibromyalgia. This will inform the development of a clinical protocol for working with fibromyalgia clients. Primary search terms include fibromyalgia, sensitisation, sleep, diaphragmatic breathing, progressive muscle relaxation, mindfulness, Myofascial Release (also known as MFR), exercise, physiotherapy, occupational therapy, osteopathy.

Synonyms include wind up, insomnia, belly breathing, relaxation training, hakomi, focussing, mind-body, MFR and physical therapy.

Google scholar and PubMed were searched using a broad search strategy, which was limited to free access articles generated in the last 10 years. This retrieved 9,728 articles. Those which were most relevant to the proposed clinical methodology were selected, with priority being given to systematic reviews and randomised controlled trials, except when research findings were novel. Thirty-eight articles were selected. Of these, 12 were excluded on closer inspection due to concerns with article quality or where the findings of articles were double reported (for example, as a randomised controlled trial, but also in a review). After the initial summary, it was clear that additional research on the relationship of trigger point phenomena to fibromyalgia syndrome would be of use. An additional three articles were located accordingly bringing the total to 26. The findings of these 26 articles are summarised in the following section. Results relating to the nature of the condition, the use of bodywork, mindbody methods, and the overall management protocol are discussed below

LITERATURE REVIEW

The nature of the condition (aetiology and pathogenesis)

Fibromyalgia syndrome is commonly understood as a condition arising from central nervous system sensitisation (Häuser et al., 2015a; Hawkins, 2013). Increased sympathetic activation, and dysregulation of the hypothalamic-pituitary-adrenal axis are typically involved, suggesting that the condition is stress-related (van Houdenhove & Egle, 2004). Core symptoms include widespread pain, fatigue, sleep disturbance and cognitive difficulties (Häuser et al., 2015a; Hawkins, 2013). Hawkins (2013) notes that some people may have central nervous system sensitisation but may not meet the criteria for fibromyalgia syndrome. He proposes that these people may be considered to have sub-clinical fibromyalgia syndrome or be on the fibromyalgia syndrome spectrum.

While fibromyalgia is generally considered a condition of the nervous system, there is evidence that other systems are affected. Systemic inflammation and neuro-inflammation (Bäckryd, 2017; Littlejohn, 2015), myofascial trigger points (Shah & Heimur, 2012; Cakit et al., 2010), dissociation and somatoform disorders (Karas et al., 2017) are all associated with fibromyalgia. Shah and Heimur (2012) note that people with fibromyalgia are much more likely to have trigger points than the general population. While these trigger points may arise as a result of central nervous system sensitisation, alternatively, the trigger points could contribute to the development of fibromyalgia syndrome, as the presence of peripheral trigger points has been shown to contribute to central sensitisation (Shah & Heimur, 2012). Karas et al. (2017) found that people with fibromyalgia had a higher rate of childhood trauma, were more likely to dissociate and/or report somatoform disorders. These authors suggested that fibromyalgia clients may benefit from emotional processing techniques.

The use of bodywork in the treatment of fibromyalgia

Literature investigating the use of massage therapy and other bodywork methods with fibromyalgia is still relatively sparse. Yuan, Matsutani and Marques (2015) conducted a review of Swedish massage, myofascial release, connective tissue massage and trigger point therapy. These authors concluded that Swedish massage had no significant effects on fibromyalgia syndrome, although this result was based on a single study that met their criteria. Yuan et al. (2015) found moderate evidence that myofascial release reduced pain. Significant pain reduction was observed up to a year after treatment, although pain reduction effects taper over time. They also found that myofascial release had a moderate effect on anxiety, fatigue, stiffness, anxiety and depression.

Several clinical reviews cite a paper by Hawkins (2013) who discovered long term effects from the use of *connective tissue massage* with fibromyalgia clients, concluding that massage is effective in this way. *Connective*

tissue massage is however quite different to *massage therapy* or *myofascial release*. The confusion arises because connective tissue is another name for fascia, making it easy for researchers to conflate *connective tissue massage* with *fascial release*.

Trigger point therapy is a modality with significant potential. Trigger points are much more common in people with fibromyalgia compared to the general population (Cakit et al., 2010). The pain from trigger points in people with fibromyalgia syndrome often adds to the pain of the underlying condition, and treatment of these trigger points leads to a reduction in pain and improvements in function (Giamberardino et al., 2011). Trigger points could also have an aetiological role in trigger point development, as the presence of trigger points has been shown to contribute to central sensitisation (Shah & Heimur, 2012). Several authors have found that the summation of active trigger point referral patterns either partially or fully reproduces the pain experienced by those who have fibromyalgia (Giamberardino et al., 2011).

The use of mindbody methods in the treatment of fibromyalgia: A sustainable approach

Mindfulness, breath retraining, and relaxation therapies all show reasonable promise in the management of fibromyalgia.

- *Mindfulness*

The Mindfulness Based Stress Reduction (MBSR) programme, developed by John Kabat Zinn, involves weekly training in some of the core mindfulness interventions typically covered in a Buddhist Vipassana programme that is, meditation focussing on the breath and bodily sensations.

MBSR and other forms of contemporary mindfulness improve outcomes such as stress, quality of life, fatigue, pain, anxiety, depression, and insomnia (Adler-Neal & Zeidan, 2017; Cash et al., 2015; Lauche et al., 2013). It is likely that mindfulness leads to a reduction in the intensity of pain due to detachment from the affective response to pain (that is, aversion and stress) which underlies sensitisation (Adler-Neal & Zeidan, 2017).

Mindfulness interventions incorporating the principles of acceptance, non-attachment, and social engagement, in addition to non-judgmental awareness, appear to be most effective in improving fibromyalgia-related outcomes. These techniques are effective against depression, anxiety, anger, pain, and another fibromyalgia-related symptomology affect (Adler-Neal & Zeidan, 2017).

The forms of mindfulness-based therapy that have emerged in the psychological healthcare space are worthwhile mentioning here, even though they were not reflected in the literature review. The original work of Gendlin, Kurtz and Levine (1981) and many others provide mindbody methods for accessing, processing and integrating traumatic experiences. The relationship between childhood trauma and fibromyalgia provides moderately strong evidence for their use.

Cash and colleagues (2015) found that there was a strong correlation between the amount of home practice and the alleviation of pain and other fibromyalgia syndrome symptoms, while Merkes (2010) found that MBSR had a high rate of compliance.

- *Breath retraining*

Two studies which used breathing in the treatment of fibromyalgia were reviewed and include Tomás-Carú and colleagues (2018) who studied the use of a highly structured 30-minute programme of specific breathing exercises, which clients completed once a day for 12 weeks. The programme, which focussed on strengthening and lengthening the thorax and abdominal muscles, led to a significant reduction in pain thresholds. Schmidt and colleagues (2012) investigated the use of deep relaxed diaphragmatic breathing at the rate of six breaths per minute in their pilot study. This was done for ten minutes, three times a day for two weeks. This led to less

sympathetic activation, greater ability to regulate autonomic tone, and a significant increase in pain tolerance, but no significant difference in pain sensitivity. Fatigue and anxiety were improved, but there was no improvement in depression.

- *Relaxation therapies*

Relaxation and movement therapies reduce pain in people with fibromyalgia (Adler-Neal & Zeidan, 2017; Theadom et al., 2015). Relaxation therapies improve physical functioning (Theadom et al., 2015). There is moderate evidence for the use of heated pools (for example, spas) in the management of fibromyalgia (Rahman, Underwood & Carnes, 2014).

The use of exercise in the treatment of fibromyalgia

There is strong evidence for the use of cardiovascular and strengthening exercises to reduce pain, and improve function for fibromyalgia syndrome clients (Bidonde et al., 2019; Chiaramonte, Bonfiglio & Chisan, 2019; MacFarlane et al., 2017; Sosa-Reina et al., 2017; Ambrose & Golightly, 2015; Busch et al., 2011). Regular exercise has a similar effect on pain levels as the use of pain killers (Ambrose & Golightly, 2015). Multi-modal (aerobic, strengthening and flexibility) exercise produces the greatest effects (Ambrose & Golightly, 2015). Cardiovascular is the most effective type of exercise for decreasing tiredness and increasing ability to engage with activities of daily living (Bidonde et al., 2019; Tomás-Carú et al., 2018). Engagement with any form of exercise reduces insomnia (Ambrose & Golightly, 2015). Movement reduces inflammation (Ambrose & Golightly, 2015). Exercise lifts mood, with combined exercise programmes having the greatest effect (Sosa-Reina et al., 2017; Ambrose & Golightly, 2015).

While the evidence for exercise is robust, the type of exercise is important. The intensity of the exercise must be matched with the client's presentation. For the exercise to be beneficial, the intensity must not be too low, but higher intensity exercise can produce pain flare-ups which lead to non-compliance. It is recommended to start with low intensity exercises and gradually increase the intensity over time (Busch et al., 2011). Smaller more regular exercise sessions are more effective than a smaller number of longer sessions (Ambrose & Golightly, 2015). If flare-ups occur, exercise intensity should be reduced by 10 per cent until there have been no flare-ups for two weeks (Busch et al., 2011).

Mindful exercise groups (for example, yoga, tai chi) show promise as they combine movement, mindfulness and socialisation (Adler-Neal & Zeidan, 2017). These forms of exercise are typically lower-intensity and are therefore suitable for clients with lower levels of functioning (Ambrose & Golightly, 2015; Häuser et al., 2015a). Preliminary results suggest that movement therapies reduce pain and may improve insomnia (Zou et al., 2017; Theadom et al., 2015). The mindful attention to balance which is often part of these programmes may also help reduce falls in patients who are at risk (Chiaramonte et al., 2019).

The overall management process for fibromyalgia

Clients who have been diagnosed with fibromyalgia do not often have a clear understanding of their condition and their prognosis. This means that spending some time clarifying this is important. Ensuring the client knows that their condition is not life threatening reduces anxiety (Hawkins, 2013). Discussing the pathophysiology of the condition and the dynamics of sensitisation can provide reassurance that it is not all in their heads, which is important for some clients (Häuser et al., 2015a; Hawkins, 2013).

It is also important to ensure the client is aware that the goal of the client-therapist alliance is to reduce symptoms rather than cure the condition (Hawkins, 2013). Promoting the self-efficacy of the client by providing them with self-management strategies, and encouragement of health promoting activities (nutrition, exercise, socialisation) should be recommended for all clients (Häuser et al., 2015a).

DISCUSSION

This review has been used to inform the development of a clinical protocol for use with clients who suffer from fibromyalgia. The protocol could also be used with clients who present with sensitisation (that is, any chronic pain) but do not meet the diagnostic criteria for fibromyalgia. According to Hawkins (2013), these clients can be on the "fibromyalgia spectrum."

A clinical protocol based on the findings of the literature has been developed. This protocol involves four main elements – client induction, foundations, myofascial release and somatic unwinding. The whole process is designed to take place over ten face-to-face sessions in a clinical environment.

Client Induction

Clients will complete three online forms before their first appointment – an SF36, stress measurement, and a wellness self-assessment form. The SF36 is a holistic health survey which is widely used within the New Zealand health system and medical research. The SF36 and stress measurement forms will provide functional measurements of progress throughout the process. The wellness self-assessment process gathers information about the client's diet, exercise and social engagement which is used in the programme to support lifestyle coaching elements.

In the first two appointments, the philosophy and structure of the programme will be discussed and clarified. This will include information about the nature of fibromyalgia and sensitisation (Hawkins, 2013; Häuser et al., 2015a). In an attempt to establish an environment which feels safe for participants, there will also be a discussion of informed consent, confidentiality and safety procedures. Establishing an environment where the client feels safe is one of the most important factors for mindfulness-based psychotherapeutic work (Kurtz, 2007).

Foundations

The foundations stage involves training in basic mindfulness methods, the establishment of anchors and the establishment of a home programme. This takes place over two sessions.

Basic mindfulness practices such as the *5 senses exercise* (Smith, 2018) and the use of diaphragmatic breathing provide clients with methods, they can use to manage their stress response. Deeper relaxation practices build on the foundation provided by diaphragmatic breathing. Progressive muscle relaxation is taught at this point. Breathing pattern is assessed using the hi-lo test. There is strong support in the literature for the use of diaphragmatic breathing, progressive muscle relaxation and mindfulness methods in the management of fibromyalgia (Adler-Neal & Zeidan, 2017; Theadom et al., 2015; Lauche et al., 2013; Schmidt et al., 2012).

Anchors have long been used in psychotherapy to provide clients respite from facing their difficult feelings. When clients become overwhelmed, directing their attention to something more pleasant can reduce their level of activation (Rothschild, 2000). The kinds of anchors that we use in this protocol are memories of attachment figures who have understood us and have had our back, and memories of places which were sanctuaries for us as children. Metta meditation is introduced at this stage. Metta, or loving kindness meditation, is the practice of developing compassion for yourself and for others. In the opinion of the author, the capacity for self-love is the best anchor of all once we have developed this.

It is increasingly recognised that many of the chronic degenerative diseases which are becoming endemic in western countries are diseases of lifestyle (Kopp, 2019). In the foundation stage, data from the wellness self-assessment is compared to public health guidelines for nutrition and exercise, and a metric for social engagement which was developed for this research programme. This comparison becomes the basis of a conversation about whether the client wishes to make any lifestyle changes.

The research on diet and fibromyalgia is more relevant to dietary specialists rather than wellness promotion generalists. Two recent reviews of dietary interventions for fibromyalgia syndrome investigated several studies which looked at the use of specialised diets or nutritional supplements. They found no studies investigating whether the improvement of a poor diet is efficacious (Lowry et al., 2020; Bjørklund et al., 2018). Given, however, that healthy eating leads to a dramatic reduction in the lifetime risk of all chronic disease (Katz & Meller, 2014), bringing nutrition up to public health guidelines is likely to be beneficial.

There was strong support in the literature for the use of cardiovascular exercise and exercise in general for fibromyalgia (Bidonde et al., 2019; Chiaramonte et al., 2019; MacFarlane et al., 2017; Sosa-Reina et al., 2017; Ambrose & Golightly, 2015). Too much exercise can however be counter-productive (Busch et al., 2011). These findings provide support for a staged programme encouraging clients to increase their level of physical activity up to public health guidelines (or whatever level is suitable for the client). Given the potential for low-intensity exercise classes (for example, restorative yoga, tai chi, aqua-aerobics) in this space (Adler-Neal & Zeidan, 2017; Ambrose & Golightly, 2015; Häuser et al., 2015a; Busch et al., 2011), it would be wise to have some information available for clients about locally available options.

The author was unable to locate any studies investigating the effect of social engagement on fibromyalgia, however studies investigating chronic pain have indicated that social engagement is negatively correlated with chronic pain (Gebhardt et al., 2021). Fibromyalgia sufferers often describe becoming socially isolated because of their condition, which presumably causes a negative feedback cycle.

One of the more common characteristics of fibromyalgia syndrome is sleep disturbance. This is generally not thought to be an initiating factor, however poor sleep is correlated with an increase of symptoms (Moldofsky et al., 1975). While many of the elements of the proposed mindbody protocol have a positive impact on insomnia (relaxation training, bodywork, exercise), it would make sense to also include some basic information about sleep hygiene and sleep hygiene services.

This protocol is designed for a therapist who is both a mindbody practitioner and a massage therapist, not a specialist in nutrition, exercise or interpersonal relationships. For this reason, any analysis and recommendations are based on a comparison of the client's lifestyle with public health guidelines. Pacing is important with healthcare programme design. It is extremely important to avoid overloading someone with fibromyalgia. It is best to start with only a few programme elements and easily achievable goals. Once the client has some early successes, elements can be added and goals can be extended (McAuley et al., 2011). The therapist should however take care to stay within the client's ability to succeed. Celebrating clients' successes, highlighting symptom reduction, and providing verbal encouragement are advisable, as this all-support client motivation (Ambrose & Golightly, 2015).

Once the foundations phase (1-2) is complete, the remaining sessions (3-10) are split between either myofascial bodywork or mindbody unwinding.

Mindbody Unwinding

The relationship between trauma and the development of fibromyalgia has already been discussed in this review. The potential this relationship implies for mindbody methods has also been discussed.

Mindbody unwinding is a method of accessing, processing and integrating somatically held trauma that has been developed by the author. This involves helping the client to get in touch with painful emotions that have in the past been avoided through dissociation, developing tolerance and acceptance of those emotions, then integrating new ways of being in the world which are uninhibited by historical fear-based avoidance responses. This is aligned with the suggestion of Karas and colleagues (2017) that fibromyalgia sufferers may benefit from

emotional processing techniques. Mindbody unwinding is influenced by the work of Gendlin (1981), Kurtz (2007) and Levine (2010) among others.

During the programme, clients are taught and guided in the use of these methods. The initial process involves the use of an emotional processing strategy which is strongly influenced by Gendlin's Focussing (1981). As the client progresses through the programme, their awareness of bodily sensations is developed through methods which are like vipassana-style body scans. In both phases, there is a strong focus on not going too deep too fast, and on integration of the experience.

Myofascial Release

Although there were not many studies investigating the use of bodywork methods with fibromyalgia syndrome, the studies that have been done support the use of myofascial release as the main bodywork method over traditional Swedish massage (Yuan et al., 2015). The review also found support for the use of trigger point therapy (Giamberardino et al., 2011; Cakit et al., 2010). The protocol therefore involves the identification and treatment of trigger points.

Postural analysis will be undertaken before any bodywork occurs based on the understanding that habitual emotional holding will be reflected in habitual neuro-muscular patterns (Heller & Henkin, 2004).

CONCLUSION

Although more research needs to be done in almost all areas, this review provides good support for the proposed mindbody protocol. This support is also reflected in the author's clinical experience. The protocol has had some moderate success in its early days. After some refinement of the model, a more formal study will be undertaken.

Reduction of fibromyalgia symptoms should theoretically improve the ability of people to engage with activities of daily living (Arnold et al., 2008). This is expected to reduce social isolation and therefore improve fibromyalgia symptoms in a positive feedback cycle. Indeed "No (wo)man is an island entire of itself."

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REFERENCES

Adler-Neal, A., & Zeidan, F. (2017). Mindfulness meditation for Fibromyalgia: Mechanistic and clinical considerations. *Curr Rheumatol Rep 19*(9),59. https://doi.org/10.1007/s11926-017-0686-0

Ambrose, K. R., & Golightly, Y. M. (2015). Physical exercise as a non-pharmacological treatment of chronic pain: Why and when. *Best Pract Res Clin Rheumatol 29*(1), 120–130. http://doi.org/10.1016/j.berh.205.04.022

Arnold, L. M., Crofford, L. J., Mease, P. J., Burgess, S. M., Palmer, S. C., Abetz, L., & Martin, S. A. (2008). Patient perspectives on the impact of fibromyalgia. *Patient Educ Couns 73*(1), 114–120. https://doi.org/10.1016/j.pec.2008.06.005

Bäckryd, E., Tanum, L., Lind, A., Larsson, A. & Torsten, G. (2017). Evidence of both systemic inflammation and neuroinflammation in fibromyalgia patients, as assessed by a multiplex protein panel applied to the cerebrospinal fluid and to plasma. *Pain Research 10,* 515–525.

Bidonde, J., Busch, A.J., Schachter, C. L., Webber, S. C., Musselman, K. E., Overend, T. J., Góes, S. M., Dal Bello-Haas, V., & Boden, C. (2019). Mixed exercise training for adults with fibromyalgia (Review). *Cochrane Database of Systematic Reviews, Issue 5.* CD013340.

Bjørklund, G., Dadar, M., Chirumbolo, S. & Aaseth, J. (2018). Fibromyalgia and nutrition: Therapeutic possibilities. *Biomedicine and Pharmacotherapy 103,* 531–538. https://doi.org/10.1016/j.biopha.2018.04.056

Busch, A. J., Webber, S. C., Brachaniec, M., Bidone, J., Bello-Haas, V. D., Danyliw, A. D., Overend, T. J., Richards, R. S., Sawant, A., & Schachter, C. L. (2011). Exercise therapy for fibromyalgia. *Curr Pain Headache Rep 15,*358–367. https://doi.org/10.1007/s11916-011-0214-2

Cakit, B. D., Taskin, S., Nacir, B., Unlu, I., Genc, H., & Erdem, H. R. (2010). Comorbidity of fibromyalgia and cervical myofascial pain syndrome. *Clinical Rheumatology 29,* 405–411. https://doi.org/10.1007/s10067-009-1342-5

Cash, E., Salmon, P., Weissbecker, I., Rebholz, W. N., Bayley-Veloso, R., Zimmaro, L., Floyd, A., Dedert, E., & Sephton, S. E. (2015). Mindfulness meditation alleviates fibromyalgia symptoms in women: Results of a randomized clinical trial. *Ann Behav Med 49*(3), 319–330. https:/doi.org/10.1007/s12160-014-09665-0

Chiaramonte, R., Bonfiglio, M., & Chisan, S. (2019). Multidisciplinary protocol for the management of fibromyalgia associated with imbalance. Our experience and literature review. *Rev. Assoc. Med. Bras. 65*(10), 1265–1274. https://doi.org/10.1590/1806-9282.65.10.1265

Danese, A., Pariante, C. M., Caspi, A., Taylor, A., & Poulton, R. (2007). Childhood maltreatment predicts adult inflammation in a life-course study. *Proc Natl Acad Sci USA 104*(4), 1319–1324. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1783123/pdf/zpq1319.pdf

Edwards, R. R., Dworkin, R. H., Sullivan, M.D., Turk, D. C., & Wasan, A. D. (2016). The role of psychosocial processes in the development and maintenance of chronic pain. *Pain 17*(9), T70–T92. https://doi.org/10.1016/j.jpain.2016.01.001

Giamberardino, M. A., Affaitati, G., Fabrizio, A., & Constantini, R. (2011). Effects of myofascial trigger points on the pain of fibromyalgia. *Curr Pain Headache Rep 15,*393–399. https://doi.org/10.1007/s11916-011-0205-3

Gebhardt, A., Langius-Eklof, A, Andermo, S., & Arman, M. (2021). Health and suffering are associated with social support: A cross-sectional study of women and mothers with exhaustion and pain. *BMC Women's Health 21,* 259. https://doi.org/10.1186/s12905-021-01398-y

Gendlin, E. T. (1981). *Focusing.* New York, NY: Bantam Books.

Häuser, W., Ablin, J., Fitzcharles, M., Littlejohn, G., Luciano, J., Usui, C. & Walitt, B. (2015a). Fibromyalgia. *Nature Reviews Disease Primers 1.* https://doi.org/ 10.1038/nrdp.2015.22

Häuser, W., Hoffmann, E., Wolfe, F., Worthing, A., Stahl, N., Rothenberg, R., & Walitt, B. (2015b). Self-reported childhood maltreatment, lifelong traumatic events and mental disorders in fibromyalgia syndrome: A comparison of US and German outpatients. *Clin Exp Rheumatol 33*(1), 88.

Hawkins, R. A. (2013). Fibromyalgia: a clinical update. *J Am Osteopath Assoc. 113*(9), 680–689. Doi: 10.7556/jaca.2013.034

Heller, J., & Henkin, W.A. (2004). *Bodywise – An introduction to Hellerwork for regaining flexibility & wellbeing.* Berkley, CA: North Atlantic Books.

Karas, H., Yildirim, E. A., Kucukgoncu, S., & Yakut, U. (2017). The relationship of childhood trauma, dissociative experiences and depression with pain in female patients: A cross-sectional study. *The Journal of Psychiatry and Neurological Sciences 30,* 86(1797–1838)94. https://doi.org/10.5350/DAJPN2017300202

Katz, D. L., & Meller, S. (2014). Can we say what diet is best for health? *Annual review of public health 35,* 83–103. https://doi.org/10.1146/annurev-publhealth-032013-182351

Kopp, W. (2019). How western diet and lifestyle drive the pandemic of obesity and civilisation disease. *Diabetes Metab Syndro Obes 12,* 221–2236. https://doi.org/10.2147/DMSO.S216791

Kurtz, R. (2007). *Body-centred psychotherapy – The Hakomi method (Revised edition).* Mendocino, CA: LifeRhythm.

Lauche, R., Cramer, H., Dobos, G., Langhorst, J., & Schmidt, S. (2013). A systematic review and meta-analysis of mindfulness-based stress reduction for fibromyalgia syndrome. *Psychosomatic Research 75*(6),500-510. https://doi.org/10.1016/j.jpsychores.2013.10.010

Levine, P. (2010). *In an unspoken voice – How the body releases trauma and restores goodness.* Berkley, CA: North Atlantic Books.

Liptan, G. L. (2009). Fascia: A missing link in our understanding of the pathology of fibromyalgia. *Journal of Bodywork and Movement Therapies 14*(1). https://doi.org/10.1016/j.jbmt.2009.08.003

Littlejohn, G. (2015). Neurogenic neuroinflammation in fibromyalgia and complex regional pain syndrome. *Nature Reviews Rheumatology 11,* 639–648. https:/doi.org/10.1038/nrrheum.2015.100

Lowry, E., Marley, J., McVeigh, J. G., McSorley, E., Allsopp, P., & Kerr, D. (2020). Dietary interventions in the management of fibromyalgia: A systematic review and best-evidence synthesis. *Nutrients 12*(9). https://doi.org.nz/10.3390/nu12092664

Macfarlane G. J., Kronisch, C., Dean, L. E., Atzeni, F., Hauser, W., Fluß, E., Choy, E. ... Jones, G. T. (2017). *Ann Rheum Dis 76,* 318–328. https://doi.org/10.1136/annrheumdis-2016-209724.

McAuley, E., Szabo, A., Gothe, N., & Olson, E.A. (2011). Self-efficacy: Implications for physical activity, function, and functional limitations in older adults. *Am J Lifestyle Med 5*(4). https://doi.org/10.1177/1559827610392704

Merkes, M. (2010). Mindfulness-based stress reduction for people with chronic diseases. *Australian Journal of Primary Health 16*(3), 200–210. https://doi.org/10.1071/PY09063

Moldofsky, H., Scarisbrick, P., England, R., & Smythe, H. (1975). Musculosketal symptoms and non-REM sleep disturbance in patients with "fibrositis syndrome" and healthy subjects. *Psychosom Med. 37*(4), 341–51.

Rahman, A., Underwood, M., & Carnes, D. (2014). Fibromyalgia. *BMJ 34* Feb 24, 348. https://doi.org/10.1136/bmj.g1224

Rothschild, B. (2000). *The body remembers: The psychophysiology of trauma and trauma treatment.* NY: Norton Professional Books.

Schmidt, J. E., Joyner, M. J., Tonya, H. M., Reid, K. I., & Hooten, W. M. (2012). Psychological and physiological correlates of a brief intervention to enhance self-regulation in patients with fibromyalgia. *Musculoskeletal Pain 20*(3), 211–221. https://doi.org/10.3109/10582452.2012.704142

Shah, J. P., & Heimur, J. (2012). New frontiers in the pathophysiology of myofascial pain. *The Pain Practitioner 22*(2), 26–33. https://www.indymyopain.com/Physiopathology%20of%20Myofascial%20Pain.pdf

Smith, S. (2018). *5-4-3-2-1 Coping technique for anxiety.* https://www.urmc.rochester.edu/behavioral-health-partners/bhp-blog/april-2018/5-4-3-2-1-coping-technique-for-anxiety.aspx

Sosa-Reina, M. D., Nunez-Nagy, S., Gallego-Izquierdo, T., Pecos-Martin, D., Monserrat, J., & Alvarez-Mon, M. (2017). Effectiveness of therapeutic exercise in fibromyalgia syndrome: A systematic review and meta-analysis of randomized clinical trials. *BioMed Research International.* https://doi.org/10.1155/2017/2356346

Theadom, A., Cropley, M., Smith, H. E., Feigin, V. L., & McPherson, K. (2015). Mind and body therapy for fibromyalgia. *Cochrane Database of Systematic Reviews 2015*(4), 1–166. https://doi.org/10.1002/14651858.CD001980.pub3.

Tomás-Carú, P., Branco, J. C., Raimundo, A., Parraca, J. A. Batalha, N., & Biehl-Printes, C. (2018). Breathing exercises must be a real and effective intervention to consider in women with fibromyalgia: A pilot randomized controlled trial. *Alternative & Complementary Medicine 24*(8), 1–8. https://doi.org/10.1089/acm.2017.0335

van der Kolk, B. A. (2003). *Psychological trauma.* DC: American Psychiatric Publications.

van Houdenhove B., & Egle, U. T. (2004). Fibromyalgia: a stress disorder? Piecing the biopsychosocial puzzle together. *Psychother Psychosom73*(5), 267-75. https://doi.org/ 10.1159/000078843

Woodward, E. N., Walsh, J. L., Senn, T. E., & Carey, M. P. (2018). Positive social interaction offsets impact of low socioeconomic status on stress. *J Natl Med Assoc 110*(4), 371–377. https://doi.org/10.1016/j.jnma.2017.07.006.

Yuan, S., Matsutani, L., & Marques, A. (2015). Effectiveness of different styles of massage therapy in fibromyalgia: A systematic review and meta-analysis. *Manual Therapy 20*(2), 257–264. https://doi.org/10.1016/j.math.2014.09.003

Zou, L., Yeung, A., Quan, X., Boyden, S. D., & Wang, H. (2017). A systematic review and meta-analysis of mindfulness based (Baduanjin) exercise for alleviating musculoskeletal pain and improving sleep quality in people with chronic diseases. *Int. J. Environ. Res. Public Health 15*(2), 206. https://doi.org/10.3390/ijerph15020206

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OPPORTUNITIES FOR NEW ZEALAND VETERINARY PRACTICE IN THE UTILISATION OF ALLIED VETERINARY PROFESSIONAL AND PARAPROFESSIONAL STAFF

Francesca Brown

INTRODUCTION

Veterinary businesses in New Zealand and worldwide are under scrutiny as the industry suffers from low mental wellbeing, remuneration and profitability. Mair et al. (2020), Armitage-Chan and May (2018), Volk et al. (2018, 2020, 2022), Gopinath (2020) all tell the story that this is the case which has been further exacerbated by the global pandemic. Remuneration and profitability are also declining against inflationary and house price measures (McCormick & Goebel, 2022).

Widespread anecdotal reports from individuals in the New Zealand veterinary sector suggest that allied veterinary professional[1] (AVP) and ParaProfessional[2] (PP) utilisation is low, and veterinarians are often carrying out technical and/or nursing tasks. In 2020, Brown identified that effective utilisation of staff skills was linked with improved staff wellbeing in veterinary practices. In 2019, Harvey and Cameron concluded that veterinary nurses are trained in tasks they are not then performing in clinical practice. There is limited data investigating why this is the case and what tools are needed to change this.

This study examines the ratios of AVP's and PP's to each fulltime veterinarian, utilisation of staff, barriers to better increasing these ratios and utilisation, and the opportunities in New Zealand Veterinary Clinics for improved wellbeing, profitability, reduced staff turnover, and better animal welfare outcomes. It then identifies the next steps for practical change.

METHODOLOGY

A survey was sent to veterinary clinic owners and/or clinic managers via the New Zealand Veterinary Association and Veterinary Council of New Zealand regular email newsletters and via New Zealand veterinary surgeons social media groups to identify what business practices are currently prevalent in their veterinary clinic. This survey covered a wide range of veterinary business practices, providing a broad base scan of the industry. It was the first step in a deeper dive into the identified priority areas to enable the development of potential business models which could be implemented to improve team wellbeing and business profitability. In this paper I offer my analysis of the data collected in the survey in relation to staff ratios, staff utilisation, and the barriers and opportunities around improved ratios of AVP's and PP's to veterinarians, and the current AVP and PP utilisation that exists.

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1 Allied Veterinary Professional (AVP) includes employees with formal veterinary nursing, rural animal technician or veterinary technology qualifications.

2 Paraprofessional includes all staff working in a veterinary practice without formal veterinary, veterinary nursing, rural animal technician or veterinary technology qualifications such as receptionists, retail staff, administration staff, practice managers.

RESULTS AND DISCUSSION

Survey participant demographics

The industry scan survey was sent to veterinary clinic owners/managers in 2021. Thirty-four (34) owners engaged with the survey questions related to ratios and utilisation. Twenty-one (21) of these were companion animal only clinics, ten (10) were mixed practice clinics and three (3) were equine only clinics. Ownership structure was primarily privately owned (approximately 60%), with the remaining being approximately 30% corporate (New Zealand or international) ownership and 10% other structures. Privately owned clinics tended to be smaller, while corporates were multibranch businesses. The survey did not identify those participants who were answering on behalf of large multibranch or corporate groups. As a result, the actual industry coverage may be greater than 34 out of the existing 403 veterinary clinics in New Zealand[3]. Other demographic data collected from the survey showed a diverse range across profitability, socioeconomic situation and location.

Table 1. Ratios of veterinarians to allied veterinary professionals and other paraprofessionals.

Ratio of AVP's to 1 FTE veterinarian	All clinics	Companion Animal only clinics	Mixed Practice clinics
Max	4.0	4.0	3.0
Min	0.3	0.3	0.4
Average	1.6	1.9	1.0
Median	1.5	1.8	0.8

Table 2. Ratios of all staff (excluding veterinarians) to veterinarians.

Ratio of all AVP and PP staff[1] to 1 FTE veterinarian	All clinics	Companion Animal only clinics	Mixed Practice clinics
Max	5.3	4.2	5.3
Min	0.9	1.0	0.9
Average	2.4	2.5	2.0
Median	2.2	2.6	1.4

Table 1 demonstrates the ratio of AVP's to 1 Full-Time Equivalent (FTE) veterinarian and Table 2 shows the ratio of all other staff (AVP's and PP's) to 1 FTE veterinarian. There is a significant range of differing staff ratios in the participating clinics. However, the average and medians of both ratios remain relatively low across all clinic types (less than 2 and slightly above 2 for AVP:1-FTE-Veterinarian and AVP's-and-PP's:1-FTE-Veterinarian, respectively). These are highly suggestive of under-utilisation, especially when considering the extensive scope of veterinary service duties that can be undertaken by non-veterinarians legally and ethically.

Limited literature that describes optimal ratios of support staff to veterinarians. The situation is likely complicated by each individual business scenario. Lloyd (2021) reported that ratios of 4:1 (veterinary nurses/technicians: 1 FTE veterinarian) would support maximising profitability. Anecdotally, New Zealand veterinarians and AVP's who have previously worked overseas report ratios of 4:1 or 5:1 (AVP and PP staff: FTE veterinarian) in companion animal clinics. They also reported benefits of this structure to them personally, the staff, animals, clients and the business.

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3 New Zealand Veterinary Sector - New Zealand has 3380 registered veterinarians (source Veterinary Council of New Zealand (VCNZ) council register, 14th Feb 2022), of which 1222 are male, 2149 are female and 13 are not specified. Of those approximately 77 % work in clinical veterinary practice.
The actual number of veterinary clinical practices in New Zealand is not known. There are 403 veterinary practices, including referral practices identified in the VCNZ register as at 14th Feb 2022 but there is an acknowledged margin of error due to recording method which could lead to a practice being recorded twice under slightly different names and could be identifying branches of the same business.
It is estimated that 60% of veterinary practices in New Zealand are companion animal practices and 40% are mixed or large animal practices, however mixed or large animal only practices tend to be larger, employing higher numbers of veterinarians.

It is harder to compare large animal clinics in New Zealand with those overseas, due to the New Zealand farming model. However, large animal veterinarians in New Zealand recognise that a large part of their current role involves technical tasks which could be completed by an appropriately qualified technician. Like companion animal clinics, there is a lack of models or case examples to help guide this change.

The four responding clinics with the highest ratios (3.5 or greater) of AVP's and PP's to 1 FTE veterinarian all reported they were meeting or exceeding the business's financial goals. Interestingly, there was no reverse correlation. The clinics with lower staff ratios were also meeting their business's financial goals. The following themes were identified from the data:

Actual Utilisation

The survey asked participants to identify who within the clinic usually carried out a list of specific tasks. The tasks provided can all be legally performed by AVP's and are skills taught within existing AVP training programmes. However, they were not labelled as AVP-specific tasks. Instead, participants were told it was simply a list of tasks performed in a veterinary clinic.

The task list was created based on legal boundaries, existing literature (Harvey & Cameron, 2019), by canvassing AVP's in clinical practice, consultation with members of the Allied Veterinary Professional Regulatory Council (AVPRC) and by reviewing the skills included in formal education programmes. The task list was not an exhaustive list. It specifically omitted rural animal technician technical tasks, such as disbudding and teat sealing. This task list was provided to participants alphabetically and did not imply an order of importance of the tasks.

Table 3. Task list for AVP's (veterinary nurses and rural animal technicians).

Task number	Task details	Task number	Task details
1	Administering prescribed medication – IM route	14	Medical record keeping
2	Administering prescribed medication – IV route	15	Microchipping*
3	Administration and monitoring of IV fluid therapy	16	Microscopy
4	Assisting with surgery	17	Monitoring and maintenance of anaesthesia
5	Booster kitten/puppy vaccinations*	18	Placement of IV catheters
6	Clinical examinations	19	Radiographic positioning and taking radiographs
7	Collection of detailed healthcare histories	20	Routine admission*
8	Coordinating care with other health care providers and specialists	21	Routine discharge*
9	Counselling and health care education to clients	22	Set up of IV fluids
10	Dental scale and polish*	23	Taking blood samples
11	Development of and active management of nursing care plans – physical, behavioural, diagnostic, and pharmacological interventions	24	Urinalysis
12	Diagnostic testing using an in-house blood analyser	25	Veterinary Nursing consultations*
13	Induction of anaesthesia	26	Wound management and minor debridement

*Veterinary Nurse only

Note: technician tasks, such as disbudding and teat sealing, were not included in the task list for the purposes of this survey.

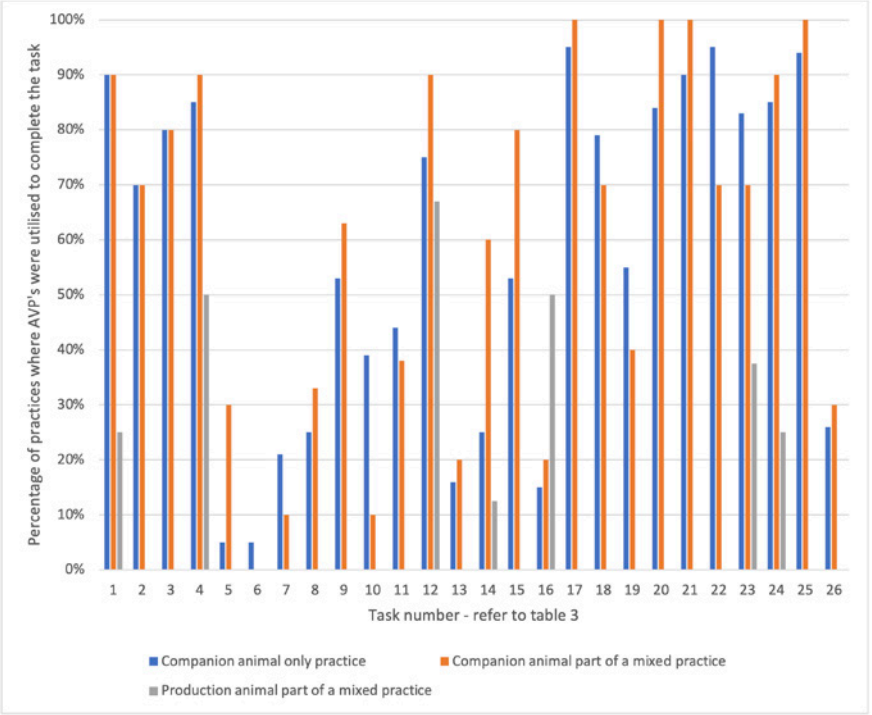

Figure 1. AVP utilisation for each task.

Figure 1 demonstrates how variable AVP utilisation is for each task, suggesting there are opportunities for increased utilisation. For companion animal AVP's, 9/26 of the tasks have AVP utilisation under 50% and a further 4/26 tasks have AVP utilisation between 50% and 70%. While it would seem reasonable that veterinarians may need to complete AVP tasks on occasion, the most efficient utilisation of staff would be seen when role appropriate tasks are allocated. Many tasks in Figure 1 are not completed by rural animal technicians. The task list was not an exhaustive list. It specifically omitted very seasonal rural animal technician technical tasks, such as disbudding and teat sealing, instead focussing on year-round tasks. Technicians are often used in practice for seasonal tasks such as teat sealing and disbudding (not included in the survey due to the seasonal nature of the tasks) and therefore only employed seasonally. There is an is an opportunity to examine widening the scope of the tasks undertaken by rural animal technicians during quiet seasons to allow for utilisation throughout the year. This may help clinics manage the significant peaks and troughs experienced in the current utilisation model of technicians more efficiently, and, in turn, allow veterinarians to complete tasks they currently do outside their normal work hours or focus on developing new business.

When the data was examined on a practice basis, the average utilisation of AVP's was approximately 57-60% of the 26 tasks included in the survey that can be delegated to AVP's for companion animal and 14% for production animal aspects of practice. The production animal data may be artificially low due to the omission of seasonal herd tasks, such as disbudding and teat sealing.

Job satisfaction may be low for these AVP's as they are not undertaking skilled tasks they are trained for according to Armitage-Chan and May (2018) and Brown (2020). This data suggests that veterinarians are expending valuable time completing technical tasks which other staff are trained for, potentially increasing their workload despite reducing their ability to complete veterinarian-specific tasks that cannot be delegated.

This may negatively influence veterinarian wellbeing. In addition, the costing structure could be impacted, as veterinarians have a salary 2-3 times higher than an AVP (Careers.govt.nz). Tasks may be more costly to the client or less profitable to the business than otherwise necessary.

Perceived Utilisation

Data related to perceived utilisation asserts the percentage of tasks clinic owners/managers felt their veterinarians performed were AVP tasks. Forty-three percent (43%) of participants thought their veterinarians did between 0-20% AVP tasks, 37% felt this was 20-40%, whilst only 20% felt this was over 40%. This suggests incongruence between the perceptions and the reality of utilisation.

If more tasks could be redirected to AVP's there are considerable opportunities to free up veterinarian time. Veterinarians can then complete their work within employed hours or undertake new business, whilst AVP's may feel more valued and have better wellbeing as a result (Brown, 2020, Page & Vella-Brodrick, 2009, Grawitch, et al., 2006). Costing structures may also be more efficient. In the current COVID pandemic, many clinics are having to schedule appointment weeks in advance due to high workloads. Assuming AVP's are available to employ, increased AVP utilisation could reduce this wait time for clients, which would result in business benefits in terms of both client satisfaction and animal welfare.

This data further indicates a lack of knowledge regarding what are appropriate AVP tasks. This may also explain why we have such low ratios of AVP's to veterinarians in New Zealand. Furthermore, lack of literature and clear case studies that model increased AVP ratios is a gap that needs to be filled, in order to showcase how higher ratios of AVP's can improve income, value to clients and how valued staff feel, as well as overall staff wellbeing.

Barriers to utilisation

Participants were asked in a free text question to identify what they considered were barriers to increased utilisation of AVP's. The data was able to be categorised into 10 themes. The themes were similar, regardless of clinic type, highlighted in Table 5.

Table 5. Barriers to increased utilisation of AVP's.

Theme	Explanation
Client trust/ acceptance of AVP's	Client willingness to accept services from an AVP were considered a limiting factor.
Vet trust in AVP's	This was a common barrier cited and is likely multifactorial. It could potentially be related to the veterinarian's own perfectionist tendencies, lack of time to support training of the AVP to ensure they can perform at the required standard, and current education standards, meaning graduate AVP's do not have the skills desired.
AVP skill	Many participants commented that the training of AVP's was not adequate and therefore they could not delegate tasks to them.
Legislation and regulation of AVPs	There were comments that legislation was preventing better utilisation of AVP's. However, all skills listed are currently legal (except for subgingival scaling by AVP's, which may be preventing veterinarians from delegating dental scale and polish to AVP's).
After Hours	After hours is widely cited as a reason AVP's are not utilised better. Participants would rather employ an additional veterinarian, to better share the after-hours workload, than an AVP.
The capacity of the building	Participants stated that there were not enough consulting rooms, preventing AVP's running veterinary nursing consultations, as an example. Other data collected suggested AVP's are rarely used in veterinary consultations to support the veterinarian.
Team culture	Some participants stated their clinics had a culture of distrust in AVP's and no expectation that AVP's can carry out specific tasks.
Financial	Some responding practice do not believe they can afford to employ quality AVP's.
Time	Lack of time to train AVP's to the expected standards, with a perception that it is easier for the veterinarians to perform the tasks instead. This is potentially closely linked to team culture.
Caseload	Limited caseload was also cited as a reason for low utilisation.

Team culture, time for training, legislation, and regulation, AVP skill, veterinarian trust and client trust in AVP's appear to be linked. The team culture requires trust in each other, allowing the whole team to contribute to creating solutions, having training plans in place and clear expectations around each team members roles and functions. According to Lai et al. (2021), pet owners view veterinarians as their most trusted source of pet health information. The Royal College of Veterinary Surgeons (RCVS, 2019) reported that veterinarians were the most trusted professionals, after opticians and pharmacists. Extrapolating from this, if veterinarians can demonstrate and communicate their trust in their AVP staff to the client, then clients will be likely to transfer this trust to the AVP. Therefore, the focus should be on creating opportunities for veterinarians to learn to trust their AVP's more. This will likely require a multifactorial approach, starting with ensuring there is a known standard that is expected from all AVPs on graduation, followed by a clear development plan for the new graduate AVP throughout their career. Career plans for AVP's are currently uncommon. Alongside this, there needs to be clarity on who can and cannot perform each task, and legislative change to regulate the AVP sector.

After hours being a barrier, appears to stem from an industry culture where AVP's are generally excluded from contributing to after-hours services. This will require further research and development of models that support utilisation of AVP's alongside after-hours service sharing models.

Financial barriers, building capacity and limited caseloads that have been identified would also require further case-specific modelling. A one size solution is not going to fit every clinic situation, and there may be other priorities for some businesses.

Opportunities for the veterinary practice with increased AVP utilization

When asked in the survey "What opportunities do you see for veterinary practice growth, including increasing the scope of practice of your veterinarians, if allied veterinary professionals were used to their full capacity?", many participants answered that there was opportunity for AVP's to perform more skilled tasks. They then proceeded to state the tasks that AVP's can already legally perform as examples. This links back to a lack of understanding around what AVP's are trained to do.

Several participants identified that it would allow veterinarians more time to better research cases and treatment, see more clients in the day, develop new income streams, as well as help to alleviate the veterinarian shortage. They could also understand how this would increase business income and job satisfaction.

The opportunities identified suggest that participants recognise there is an underutilised resource in veterinary clinics. Case modelling that addresses the barriers along with real-life case studies would be helpful.

What is needed now to support increased utilisation

1. A clear scope of practice for AVP's and PP's (such as animal healthcare assistants) – veterinarians need to know what tasks are appropriate for AVP's and PP's to complete. AVP's and PP's also need to have clear boundaries. Work is currently underway by AVPRC to create this scope.
2. Ensuring there is clear consistency in AVP education as well as clear career pathways that allow AVP's and PP's to continue developing skills. Work is currently underway in the education sector to create a unified programme, with support by the industry regulating body to direct the curriculum and clinical skills expectations. There are discussions surrounding the development of a micro credential programme to prove evidence of skill competency, to help increase confidence in AVP's and trust from veterinarians.
3. Further investigation into the barriers and opportunities identified by improving staff utilisation.
4. Example business models that show how to better utilise staff and the value that efficient staff utilisation creates for staff, clients, and the business. Every business scenario is different, hence, there is unlikely to be a one size fits all approach. Models will need to be adjustable for factors such as locality, building capacity and client load.

Limitations of research

The limitations of this research at this stage does not provide ultimate solutions to the industry to tackle the underlying problem.

Future research

In 2022, further research is being undertaken using focus groups to develop models using high AVP and PP to veterinarian ratios to demonstrate how it works practically within a business and the impacts on finances, staff wellbeing and client satisfaction. It is also working through mitigation of the barriers identified. Many other factors, such as staff wellbeing, fee structures and remuneration, will contribute to this and further research is needed.

CONCLUSION

The AVP-and-PP:1-FTE-veterinarian ratios are suggestive of poor utilisation of veterinary staff. The data gathered on AVP utilisation supports this. It is often articulated that AVP's are underutilised. Whilst this may be true, it misses the fact that veterinarians are also being underutilised. If a veterinarian spends a large proportion of their time performing tasks which AVP's can proficiently perform (with the appropriate in-clinic support and mentoring), then veterinarians will have less time to dedicate to veterinarian-specific tasks. Anecdotally, reports from industry describe veterinarians currently working long unpaid hours writing client records, reading, and researching cases and following up with clients.

Ineffective utilisation of skill sets also impacts business cost structures. This is reflected in increased business costs, inappropriate staff salaries and costs to the client. While there are always going to be cases where it just makes sense for the veterinarian to perform the AVP task, a change in staffing ratios and structure, addressing the barriers of trust and training, and providing clear financial benefit modelling, those cases would likely be a small minority.

In addition to contributing to workload issues and business profitability, underutilisation of skill sets can be linked to individual staff feeling undervalued, which reduces job satisfaction and, ultimately, personnel wellbeing (Kuijk 2019).

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REFERENCES

Armitage-Chan, E., & May, S. A. (2018). Identity, environment and mental wellbeing in the veterinary profession. *Veterinary Record, 183*(2), 68–68. doi:10.1136/vr.104724

Brown, F. (2020). Profit and staff wellness: Can we have both in veterinary practice in New Zealand. *Scope: Contemporary Research Topics Health & Wellbeing 5*, 65–78. doi:10.34074/scop.3005010

Gopinath, D. (2020, April 20). Is offering freebies good for business? *Vet Practice Magazine*. Retrieved March 1, 2022, from https://vetpracticemag.com.au/is-offering-freebies-good-for-business/

Grawitch, M. J., Gottschalk, M., & Munz, D. C. (2006). The path to a healthy workplace: A critical review linking healthy workplace practices, employee well-being, and organizational improvements. *Consulting Psychology Journal: Practice and Research, 58*(3), 129–147. doi:10.1037/1065-9293.58.3.129

Harvey, L., & Cameron, K. (2019). Comparison of expectations between veterinarians and veterinary nurses in tasks and responsibilities in clinical practice. *The Veterinary Nurse, 10*(6), 327–331. doi:10.12968/vetn.2019.10.6.327

Kuijk, A. (2018). Herzberg two factor theory of motivation. Retrieved March 1, 2022, from https://www.toolshero.com/psychology/two-factor-theory-herzberg/

Lai, N., Khosa, D. K., Jones-Bitton, A., & Dewey, C. E. (2021). Pet owners' online information searches and the perceived effects on interactions and relationships with their veterinarians. *Veterinary Evidence, 6*(1). doi:10.18849/ve. v6i1.345

Lloyd, J. W. (2021). *Pet healthcare in the US: Are there enough veterinary nurses/technicians? Is there adequate training capacity?* https://www.marsveterinary.com/wp-content/uploads/2022/03/Characterizing%20the%20Need%20-%20VN%20-%20FINAL_2.24.pdf

Mair, T. S., Mountford, D. R., Radley, R., Lockett, E., & Parkin, T. D. (2020). Mental wellbeing of equine veterinary surgeons, veterinary nurses and veterinary students during the COVID-19 pandemic. *Equine Veterinary Education, 33*(1), 15-23. doi:10.1111/eve.13399

McCormick, D., & Goebel, D. (2022, February 18). *Are practice values changing over time?* https://todaysveterinarypractice.com/practice-management/are-practice-values-changing-over-time/

Page, K. M., & Vella-Brodrick, D. A. (2008). The 'What', 'Why' and 'How' of employee well-being: A new model. *Social Indicators Research, 90*(3), 441–458. doi:10.1007/s11205-008-9270-3

Royal College of Veterinary Surgeons. (2019, December 23). *Vets amongst the most trusted professionals, according to survey.* https://www.rcvs.org.uk/news-and-views/news/vets-amongst-the-most-trusted-professionals-according-to-rcvs/

Volk, J., Schimmack, U., Strand, E. B., Reinhard, A., Vasconcelos, J., Hahn, J., … Probyn-Smith, K. (2022, September 1). *Executive summary of the Merck animal health veterinarian wellbeing study III and veterinary support staff study.* https://avmajournals.avma.org/view/journals/javma/260/12/javma.22.03.0134.xml

Volk, J. O., Schimmack, U., Strand, E. B., Vasconcelos, J., & Siren, C. W. (2020). Executive summary of the Merck animal health veterinarian wellbeing study II. *Journal of the American Veterinary Medical Association, 256*(11), 1237–1244. doi:10.2460/javma.256.11.1237

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SUPPORTING THE HEALTH OF FIJIAN WOMEN

Cynthia Mullens and Jean Ross

INTRODUCTION

In this paper we present a sustainable project that supports the health of women situated in the Pacific Island community of Nasovotava, Fiji. We showcase how nurse learners from the School of Nursing, Otago Polytechnic, Dunedin, New Zealand collaborated with the community stakeholders from this island nation to identify the health needs of women, then worked collaboratively to improve health inequities. We discuss sustainability as it relates to this sustainable project in four parts, sustainability; United Nations Sustainable Development Goals; sustainable project; identified community needs and development of resources.

Sustainability

There is a growing need to understand sustainability as it relates to health and nursing practice (McMillan, 2014). In 2000 the United Nations set out an aspirational goal to reduce extreme poverty through global community engagement, supported by the Millennium Declaration (United Nations, 2019). Monkelbaan (2019) states that in 2015 the Millennium Declaration Goal was reviewed by the United Nations and led to the development of the Sustainable Development Goals (SDG's) (United Nations, 2019). This new vision recognises the basic components which allow for sustainable development of communities, including the eradication of poverty; combatting inequality and preserving the planet which are intrinsically linked with the foundations identified as social determinants of health (Marmot & Wilkinson, 2006). SDGs includes seventeen sustainable goals with specific indicators which provides a framework for global communities to endeavor and achieve hopefully by the year 2030. Implementation of the SDG's has been identified as imperative on a regional and global level, while working collaboratively to realise the vision of social equity amongst populations.

For the purposes of this paper our focus relates to sustainability, health, and community development, supported by the 17 Sustainable Development Goals as highlighted above (United Nations, 2019). Sustainable health links to the United Nation General Assembly who make specific mention of the vulnerability of Small Island Developing States (SIDS) and the impetus with which the larger global community must respond.

New Zealand is committed to global solutions and sustainable development with special consideration for SIDS, working towards achieving Goal 17, identified as Partnership for the Goals (New Zealand Voluntary Review, 2019). This partnership fosters intercultural understanding, mutual respect and builds on the ethic of global citizenship and shared responsibility (United Nations, 2019). The School of Nursing at Otago Polytechnic, Dunedin is equally committed to assist in achieving the SDGs (United Nations, 2019) at a 'grass roots' level by incorporating the concepts of global citizenship within nurse learning. Incorporating a 'grass roots' approach can allow for small measurements of success that build upon the momentum and lead to significant and meaningful change, a goal we set out to achieve by engaging in this sustainable project. The following example discussed in this paper showcases one such grass-roots approach to sustainable community health in the remote Pacific Island community of Nasovotava, Fiji.

Sustainable Project

In 2019 a Community of Practice was founded at Otago Polytechnic and became known as Project Fiji. Project Fiji is a committee established as a joint venture in community development with a focus on collaborating and supporting future projects in the villages of Nasovotava and Nadroumai, Fiji. Community development discussions with Fijian stakeholders (residing in Dunedin at that time who assisted in face-to-face collaboration), was established, and developed the vision for Project Fiji. This vision was to achieve positive outcomes aligning with the United Nations 17 SDGs of 2030, with an initial focus on Health and Wellbeing through the provision of Water and Sanitation (WASH) projects. The focus of this project was identified as most pressing by Fijian community elders and leaders, and established a five-year plan identifying needs and collaborating with learners from Otago Polytechnic Schools of Engineering and Nursing.

Due to COVID-19 and the declaration of a global pandemic, all opportunities to physically collaborate and engage with the goal of this committee became unattainable. Shifting context since 2020, has allowed for virtual engagement with global communities. Third-year nurse learners completed their primary health care clinical placements successfully during COVID-19 through a facilitated virtual platform with the communities of Bishop's Castle, Shropshire, United Kingdom and Liro, Paama, Vanuatu. This provided a framework to further develop virtual engagement and through discussion with the Project Fiji committee members it was agreed that virtual engagement (rather than physical face-to-face engagement) would be viable and the community of Nasovotava was proposed as an initial focus. Through collaboration with village elders, health care workers in this community and the Dunedin based Fijian community stakeholders, together with a team of eight third-year Bachelor of Nursing learners from Otago Polytechnic, School of Nursing, a sustainable project commenced in May 2022.

CHASE Model

The learners applied the Community Health Assessment Sustainable Education (CHASE) model (Ross, Crawley & Mahoney, 2017) to guide the project. The first aspect of this was to get to know the community of Nasovotava, Fiji.

COMMUNITY OF NASOVOTAVA, FIJI

Fiji is in the South Pacific Ocean approximately 2,100km north of Auckland, New Zealand (Macdonald, 2022). It consists of around 300 islands distributed over 1.3 million square kilometres, however only 100 of these islands are inhabited by the Fijian population (Macdonald, 2022). The largest island in Fiji is Viti Levu, where Nasovotava is located south-east and inland from Nadi, it is approximately a two-and-a-half-hour drive from the nearest urbanised town of Sigatoka (Macdonald, 2022). Nasovotava is situated in a valley surrounded by Fiji's dense forestry and mountain terrain and has a population of 270 people, 50 households, and 60 families (E. Nabalagi 2022, pers. comm.). The locals of Nasovotava use the vegetation provided by the natural environment for medication and healing processes. There is a river that runs by the village which provides the local villages with fresh drinking water; however, water can become scarce during the dry season (E. Nabalagi 2022, pers. comm.).

Nasovotava has limited transportation which can restrict the community's accessibility to services such as healthcare and schooling. The village is very secluded, it has one dirt road that provides access to the village. In 2019 the Fijian government collaborated with the village to purchase a truck to help transport children to and from school every day. Nasovotava is a one hour walk to the main road, from there a bus can be taken to the nearest urbanised community, Sigatoka, which takes a further 90 minutes by vehicle (E. Nabalagi 2022, pers. comm.).

Due to coastal beaches and recreational attractions, Fiji has positioned itself as a go-to tourism country of the Pacific. This is due to its optimal location near Australia, New Zealand, Japan, and the United States which not only makes it easy to travel by air but by cruise ship as well. The tourism industry is based on attractions and duty-free shopping (Macdonald, 2022). In 2017, Fiji received more than 842,000 visitors who spent $1.9 billion across the tourism industry which employed 118,500 Fijians. The tourism industry contributed approximately 34% towards Fiji's Gross Domestic Product (International Finance Corporation, 2020).

The health needs of the community were identified by a process of profiling and assessing the community, collaborating with community stakeholders, and applying a rapid needs analysis to identify health status of the community and areas within which nursing engagement could facilitate improved health outcomes. Once health needs were identified, learners conducted a literature review to assist with research and development of a sustainable approach that could help facilitate improved health outcomes.

Figure 1. Nurse learners and stakeholders, Otago Polytechnic, School of Nursing, Dunedin, New Zealand.
Source: Cynthia Mullens.

Identified Health Needs

One area of need identified by the nurse learners and confirmed by community stakeholders and the village healthcare worker was women's health. Many women in Nasovotava do not have frequent access to women's health checks or appropriate menstrual hygiene products. Women are responsible for buying their own menstrual hygiene products but the cost for these are a huge barrier for women (M. Matai 2022, pers. comm.). Sustainability is a key theme in making sure the community of Nasovotava can continue improving women's health, especially around the usage and disposal of menstrual hygiene products. In rural Pacific areas, it is more common to use reusable or easily decomposable products such as reusable cloth pads, knitted tampons, menstrual cups, bamboo fibre pads and banana fibre pads, rather than commercial sanitary pads. This is because commercial tampons and sanitary pads are expensive, non-reusable, not environmentally friendly and are not able to be easily accessed. This leads to waste build up and problems with waste disposal.

Most common types of the reusable menstrual hygiene products are washable cloth pads and knitted tampons made up of natural products such as bamboo, wool, hemp, and cotton as these are absorbent materials. These are sustainable sanitary options but must be hygienically washed and dried in the sunlight to become naturally

sterilised (Kaur, R., Kaur, K., & Kaur, R., 2018). The tampons can be knitted or crocheted into specific shapes that can be inserted into the vagina to absorb the menstrual flow (Kaur, et al., 2018). Furthermore, access and the use of these cloth pads have improved the attendance at school compared to those students that do not have any menstrual products (Hennegan, 2017). Hennegan (2017) noted that although providing sanitary pads did improve education attendance, it did not address other challenges of managing menstruation such as the washing and drying of the pads. This is a further area identified as a health issue by the learners so these pads could be used effectively and sustainably.

As part of conducting this sustainable project the learners developed the following health promotion resources to be considered by the women of the community with the aim to improve this health issue.

Health Promotion Resources

Not having access to sanitary products has a huge negative impact on women's health in Fiji. This lack of access can occur due to financial and geographical barriers. In Fiji the price of commercial sanitary products can be a burden to women and their families. This is because many women and adolescent girls in both urban and rural areas are living below the poverty line (Vogel, et al., 2022). Women are often faced with the difficult choice between purchasing food or sanitary items. The nurse learners endorsed the use of sustainable menstrual products, such as cloth pads, banana fibre pads, and reusable tampons to improve women's reproductive health and decrease the amount of waste disposal. Introducing reusable products that are eco-friendly, affordable, and the resources are easily accessible has a greater impact on improving health needs in a sustainable way (Kaur, et al., 2018). There can be multiple negative impacts on women because of improper disposable of commercial menstrual hygiene products. There can often be feelings of embarrassment when women are not able to dispose of sanitary products discreetly. Therefore, often women exclude themselves from the community when experiencing menstruation and this can cause emotional distress and shame associated with their menstrual cycle. Commercial sanitary pads are expensive and do not decompose easily therefore are unsustainable for the rural community of Nasovotava. To assist the women of Nasovotava and improve their health, nurse learners developed templates and instructions on how to create reusable sanitary pads as a health promotion resource that will not only improve on current health needs but one which can also continue to be built upon in the future (Figure 2).

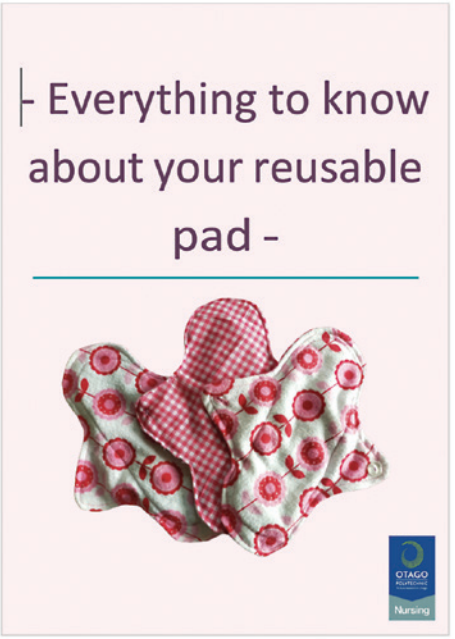

Figure 2. Health Promotion Resource Developed. Source: Cynthia Mullens.

Figure 3. Nurse learners, stakeholders, and volunteers from Otago Polytechnic, School of Nursing, Dunedin, New Zealand. Source: Cynthia Mullens.

The learners also produced these reusable hygiene products for distribution for the women of the community. The learners engaged in a one-day workshop (12 hours of sewing) (Figure 3) that allowed for 125 sanitary pads to be made, and though a shortfall from their desired goal, the capacity to continue to develop the products has been distributed to the community with delivery of the products made by one of the Dunedin stakeholders who visited Nasovotava, Fiji, in October 2022. (Figure 4). Together with the sanitary pads, instruction manuals etc. were the raw materials to allow for start-up in the community by the women themselves.

Figure 4. Delivery of developed resources to community village health worker in Nasovotava, Fiji. Source: E. Nabalagi and Community Stakeholder (published with permission).

CONCLUSION

The community of Nasovotava, Fiji was the chosen community to work in partnership with nurse learners from Otago Polytechnic, Dunedin, New Zealand to promote and implement new strategies to improve women's health. The development and utilisation of sustainable menstrual hygiene products contributes to achieving the SDG *Goal 3 Good Health and Wellbeing* of the 17 United Nations Sustainable Development Goals (United Nations, 2019). This community development project related to women's health has also contributed to the SDG *Goal 17: Partnership for the Goals* which is important for sharing knowledge, expertise, technologies, and financial resources to support the achievement of the sustainable development goals in all countries, particularly developing countries like Fiji. The goal has been to work in partnership with the women of Nasovotava, Fiji to ensure that these health goals align with the health needs of the women in a culturally safe manner.

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REFERENCES

Hennegan, J. (2017). Menstrual hygiene management and human rights: The case for an evidence-based approach. *Women's Reproductive Health 4*(3), 212–231, doi: https://10.1080/23293691.2017.1388720

International Finance Corporation. (2020). Fiji COVID-19 business survey: Tourism focus, International Finance Corporation, Suva, Fiji Islands. https://www.mcttt.gov.fj/wp-content/uploads/2020/07/Fiji-COVID-19-Business-Survey-Results-Tourism-Focus.pdf

Kaur, R., Kaur, K., & Kaur, R. (2018). Menstrual hygiene, management, and waste disposal: Practices and challenges faced by Girls/Women of developing countries. *Journal of Environmental and Public Health, 9*. doi: https://doi.org/10.1155/2018/1730964

Marmot, M. & Wilkinson, R. (2006). *Social determinants of health 2nd ed.* New York: Oxford University Press.

Monkelbaan, J. (2019). *Governance for the sustainable development goals: Exploring an integrative framework of theories, tools, and competencies*. Singapore: Springer.

Macdonald, B. K. & Foster, S. (2022). *Fiji history, Britannica*. https://www.britannica.com/place/Fiji-republic-Pacific-Ocean/History

McMillan, K. (2014). Sustainability: an evolutionary concept analysis: Exploring nursing's role within the sustainability movement. *Journal Advanced Nursing 70*(4), 756–767.

New Zealand Voluntary Review (NVR). (Report No. 1) (2019). https://www.mfat.govt.nz/en/peace-rights-and-security/work-with-the-un-and-other-partners/new-zealand-and-the-sustainable-development-goals-sdgs/nzunvnr2019/

Ross, J., Crawley, J. & Mahoney, L. (2017). Sustainable community development: Student nurses make a difference. *Scope Contemporary Research Topics: Learning and Teaching 4,* 1–10.

United Nations. (2019). Sustainable development goals. https://www.un.org/sustainabledevelopment/sustainable-development-goals/

Vogel, W., Hwang, C.D. & Hwang, S. (2022). Gender and sanitation: Women's experiences in rural regions and urban slums in India. *Societies 12* (1). https://doi.org/10.3390/soc12010018

Research Article https://doi.org/10.34074/scop.3007005

ATTITUDES, INTENTIONS AND READINESS TOWARDS COVID-19 VACCINES: A SURVEY OF STAFF AND STUDENTS WITHIN A NEW ZEALAND VOCATIONAL TERTIARY INSTITUTE

Kathryn Ross, Rachel Scrivin, Mary Cooper and Campbell Macgregor

INTRODUCTION

The COVID-19 pandemic is a highly contagious virus where the death toll continues to rise, and demographers are struggling to provide data on the official death toll (Adam, 2022). Vaccination has significantly reduced the global infectious disease burden, the mortality rate (Andre et al., 2008) and improved health outcomes globally (Rodrigues & Plotkin, 2020). Despite the high level of vaccination safety (Rosenblum et al., 2022), attempts to increase vaccination coverage remain a challenge and frustrate public health efforts across higher-income countries and developing economies.

Vaccine hesitancy is a complex phenomenon and an emerging area of inquiry (WHO SAGE Working Group, 2014a). Despite the availability and accessibility of vaccine services, those who are vaccine hesitant delay or refuse to accept a vaccine (MacDonald, 2015; WHO SAGE Working Group, 2014b). Perceptions inform the level of confidence or trust in the safety and efficacy of a vaccine, complacency about possible risks posed by vaccine-preventable diseases and perceived convenience factors such as accessibility and service delivery (MacDonald, 2015). Vaccine hesitancy can vary amongst individuals and groups, across time, location, and vaccine type (WHO SAGE Working Group, 2014b). Vaccine hesitancy or reluctance (Swaney & Burns, 2019) contributes to lower vaccination rates among children (World Health Organisation, 2021) and adults (Perkins et al., 2015) and presents a risk for infection outbreaks. Effective community protection from infectious disease (herd immunity) requires approximately 70% of the world's population to be fully vaccinated (World Health Organisation, 2021).

As the pandemic and vaccine rollout unfolds internationally, vaccine hesitancy in New Zealand was reported by the Ministry of Health (MoH) Horizon Surveys over seven months from mid-2020 as a vaccine acceptance rate of 69% (Horizon Research, 2021a). New Zealand's vaccine acceptance rates are similar to Australia and the United States (67-75%), lower than some Asian nations with rates approaching 90%, but higher than most European nations with 50%-60% (Malik, 2021). The MoH also found that the percentage of the population who will *definitely not* take a vaccine is predicted to remain unchanged at about 9.4% (Horizon Research, 2021b). However, the percentage of people who were *unsure* or *unlikely* to take a vaccine indicated a slight increase in vaccine hesitancy with greater need for assurances about vaccine safety over the survey period (Horizon Research, 2021b), a pattern repeated in multiple surveys undertaken as part of a large European Covid-19 vaccine hesitancy study (Valckx et al., 2022). Similarly, Thaker commented, "Increasing public enthusiasm for vaccination should co-occur with the development of a COVID-19 vaccine" (Thaker, 2021, p. 6) suggesting the situation is dynamic, and further research may find additional shifts. In addition, research focusing on subsets of the general population can assist with public education that may need to be adjusted to different groups or cohorts.

The current research presented in this paper aims to investigate staff and students' attitudes, intentions, and readiness at a New Zealand vocational education institute of technology toward COVID-19 vaccination. The intention is to supplement current findings from general New Zealand population surveys with up-to-date data on the attitudes, intentions and readiness of staff and students working or studying in the tertiary vocational section in the Bay of Plenty and Waikato, New Zealand. It is anticipated that this will allow a more granular understanding of attitudes, intentions and readiness regarding COVID-19 vaccination while vaccination is underway. At the time of writing, both Lakes and Bay of Plenty District Health Boards (DHB) in New Zealand have embarked on a vaccination rollout. Vocational institutes within New Zealand have campuses spread across regions where large numbers of people consistently come to study and work. This study focused on staff and students' attitudes, intentions, and readiness, therefore providing evidence to vocational health centres on campus that this service is a viable option. Understanding vocational staff and students' willingness to be vaccinated is essential due to the New Zealand government investigating the setting of vaccination centres within schools and workplaces. Unlike universities in New Zealand, vocational education has campuses within smaller towns and rural areas, in most cases creating a focal point for that community. Approximately 240,000 students are involved in vocational education annually, supported by around 12,000 staff, now under the merged Te Pūkenga entity.

METHODS

This descriptive, cross-sectional study used a quantitative research design implementing an online survey. The survey was created using *Google forms* and was designed to investigate student and staff attitudes, intentions and readiness regarding COVID-19 vaccination. The survey was adapted (with permission) from a previously validated survey from Horizon Research Limited that examined COVID-19 vaccines (Horizon Research, 2020). The survey was available for current Toi Ohomai Institute of Technology Ltd. staff and students over three weeks during June 2021.

Inclusion criteria was the current staff and enrolled students from all five Toi Ohomai campuses (i.e., Rotorua, Tauranga, Taupō, Tokoroa and Whakatāne) in the North Island of New Zealand. Approximately 900 staff and 7000 students were eligible to participate. An invitation to participate in the survey was distributed via the internal staff intranet (Te Aka). All currently enrolled students were emailed an invitation through email (via the Marketing and Communication Team in the capacity as gatekeeper) addresses provided on enrolment. Participant information was gathered before starting the survey and written online informed consent was required. To incentivise participation, survey completers were entered into a prize draw for vouchers. Ethical approval was obtained from the Toi Ohomai Research Office (Ethics research number: TRC 2021.057).

The online survey consisted of two sections with a total of 27 questions. The first section collected participant demographic data, and the second section gathered participant attitudes, intentions and readiness regarding COVID-19 vaccination. Demographic data included gender, age, ethnicity, household income, personal income, employment status, learner type, highest qualification, and dwelling location. Participant intention questions regarding COVID-19 vaccinations included statements regarding beliefs, confidence in vaccine standards, and prevention of infection or transmission. Participants responded according to what they felt was correct or the level of confidence in the vaccine using a 5 or 7-point Likert scale.

STATISTICAL ANALYSIS

Descriptive statistics were used for demographic data, including median, range and interquartile ranges (IQR). For questions with Likert-scale responses, differences in responses for variables with multiple factor levels (e.g. educational level, ethnicity, dwelling location and influenza vaccine intention) were tested using the Kruskal-Wallis test with post-hoc analysis using the Dunn Test (Dinno, 2015) and the Benjamini-Hochberg method for adjusting *p*-values for multiple comparisons (Benjamini & Hochberg, 1995). These results are reported as H

(degrees of freedom) and *p*-value. For variables with two factors levels (e.g. vocational position), differences between groups were tested using the Mann-Whitney U test, with results reported in the form U (degrees of freedom), *z*-value, *p*-value. For this analysis, staff who were also students were classified and grouped as staff. The correlation between age and degree of confidence was tested using Kendall's tau. All statistics were analysed using R version 4.1.0 (R Core Team, 2021). Graphs showing the difference in response across groups were plotted using the Likert package (Bryer & Speerschneider, 2016).

RESULTS

Demographics

There were 609 survey responses, with a response rate of approximately 12.9%. Median age of respondents was 31 years (range=17-76; IQR=20; see Figure 1a). Most participants identified themselves as NZ European/Pakeha (59.3%) or Māori (30.7%); see Figure 1b. Other respondent characteristics are given in Table 1.

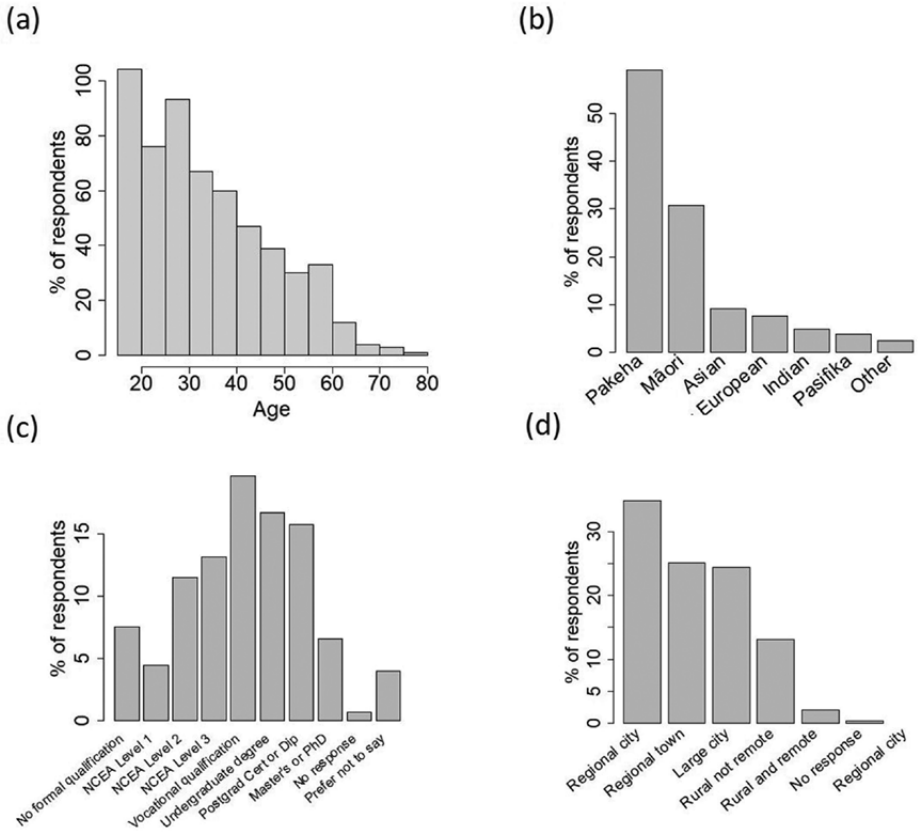

Figure 1. Respondent demographics: (a) Age (b) Ethnicity (c) Highest educational level attained (d) Dwelling location.

Respondent characteristics	n	%
Gender		
Female	412	67.7
Male	192	31.5
Not stated	4	0.7
Gender diverse	1	0.2
Vocational position		
Student	570	93.6
Staff	19	3.1
Student & staff	16	2.6
Not stated	4	0.7
Employment status		
Employed	363	59.6
Not employed	212	34.8
Prefer not to say	25	4.1
Not stated	9	1.5
Annual household income		
<$20,000	75	35.0
$20,001 - $30,000	52	8.5
$30,001 - $50,000	72	11.8
$50,001 - $70,000	77	12.6
$70,001 - $100,000	80	13.1
$100,001 - $150,000	66	10.8
$150,001 - $200,000	36	5.9
>$200,000	16	2.6
Not stated	135	22.2

Table 1. Respondent characteristics: gender, vocational position, employment status, annual household income.

Responses to vaccine questions/statements

Table 2 shows the responses to statements about vaccines that were true (2a), false (2b) or intended to gauge opinion (2c).

2(a) The percentage of respondents who agreed with the following true vaccine statements.

TRUE STATEMENTS	% of respondents agreeing with statement
People in New Zealand can choose whether or not to get vaccinated.	87.5
The COVID-19 vaccines are offered free in New Zealand.	85.4
Anyone who has had a severe or immediate allergic response to any vaccine or injection in the past should discuss this with their vaccinator.	84.4
Vaccines are rolled out to people in New Zealand using a risk-based approach –people at the greatest risk from COVID-19 can get vaccinated early.	84.1
Once I have had the Pfizer/BioNTech COVID-19 vaccine, I will need to continue with physical distancing, QR code scanning and mask wearing on public transport.	79
COVID-19 vaccines will play a critical role in protecting New Zealanders' health and well-being.	77.5
People who have been vaccinated can still catch COVID-19.	67.8
Over time, COVID-19 vaccines will allow a return to normality.	67.7
The Pfizer/BioNTech vaccine may cause side effects in some people but they are common, mostly mild and won't last long.	65.7
It is too soon to see if there are any long-term side-effects from the Pfizer/BioNTechvaccine.	64.2
People who are vaccinated can still pass the COVID-19 virus on to others.	56.7
At the moment, COVID-19 vaccines will be offered only to people in New Zealand if they are 16 years of age or older.	53.4
The Pfizer/BioNTech vaccine has been shown to be 95% effective.	51.4
People are having serious reactions after taking the Pfizer/BioNTech vaccine.	21.2
People are dying after taking the Pfizer/BioNTech vaccine.	12
	100

(b) The percentage of respondents who agreed with the following false vaccine statements.

FALSE STATEMENTS	% of respondents agreeing with statement
Those who are pregnant, breastfeeding or think they may be pregnant should talk to their doctor or midwife before having a COVID-19 vaccine.	84.7
I won't be able to pass COVID-19 on to others.	10.7
I won't need to continue with protective behaviours (physical distancing, QR code scanning and mask-wearing on public transport).	9.5
The COVID-19 vaccine can alter your DNA.	6.6
I will only need one, not two doses of the Pfizer/BioNTech vaccine, to be fully protected.	4.1
The COVID-19 vaccines contain a microchip.	3.6
	100

(c) The percentage of respondents who agreed with the following opinion-based vaccine statements.

STATEMENTS OF OPINION	% of respondents agreeing with statement
It is too soon to see whether there are any long-term effects from the vaccine.	52.1
I worry there will be unknown side effects.	40.2
I worry how the side effects will affect me.	39.2
Once I have had the Pfizer/BioNTech COVID-19 vaccine, I'm really not sure if I will need to continue physical distancing.	32.2
I worry it might affect my health in other ways.	30
I would rather wait to see if it causes any problems for others.	27.9
I don't know enough about vaccines.	26.3
COVID-19 vaccine development was too rushed.	25.9
Once I have had the Pfizer/BioNTech COVID-19 vaccine, I will still be physical distancing but I'm really not sure if I can pass it on to others.	21.8
I am concerned the vaccine may not be effective.	21.3
The idea of taking the COVID-19 vaccine frightens me.	16.4
I don't know how a COVID-19 vaccine works.	15.9
Taking the COVID-19 vaccine may leave my health overall worse.	14
The COVID-19 vaccine might adversely affect my existing medical conditions andsymptoms.	11.7
I don't see any need for me to take the COVID-19 vaccine.	10
I have had adverse reactions to other vaccines and I am worried.	4.4
I worry a COVID-19 vaccine might give me COVID-19.	4.3
Other concerns	4.3
	100

Effect of age on responses

Increased vaccine hesitancy was found among younger respondents. In response to the question *"Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will meet acceptable safety and quality standards?"* the degree of confidence positively correlates with age (r_τ = 0.12, p=0.0003). In the 55+ age group, 80% of respondents were *confident* or *very confident,* compared with only 55% in the 22-25 age group. The proportion of respondents who were unsure about safety and quality standards was higher in the under 35s than those in the older age group (see Figure 2a).

Likewise, in response to the question *"Will you take the Pfizer/BioNTech COVID-19 vaccine?",* the positivity of response correlated with age (r_τ = 0.12, p=0.00007), with 90% of the 55+ age group responding positively, 78% for the 35-54 age group and <70% for the younger age groups (see Figure 2b).

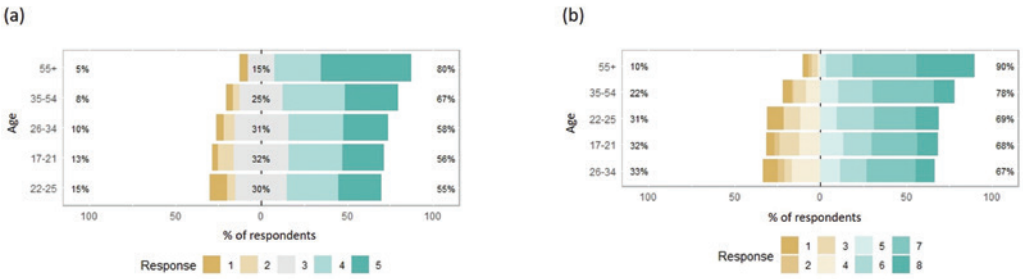

Figure 2. Response to vaccine confidence questions for different age groups.

(a) Responses to the question, "*Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will meet acceptable safety and quality standards?*"; 1=Not confident at all, 2=Not very confident, 3=I'm really not sure, 4=Confident, 5=Very confident.

(b) Responses to the question, "*Will you take the Pfizer/BioNTech COVID-19 vaccine?*"; 1=Definitely not, 2=Most unlikely, 3=Unlikely, 4=Unsure, 5=Likely, 6=Most likely, 7=Definitely, 8=Already vaccinated.

Percentages displayed on the left of the graph indicate % of negative responses, those on the right indicate % of positive responses, and those in the centre indicate neutral responses, if applicable.

Responses of staff versus students

Staff indicated greater intention to get vaccinated (89%) compared with students (73%), but this difference was not statistically significant ($U_{(35,567)}$=11150, z=1.26, p=0.2).

Effect of educational level on responses

There were small but significant differences in responses about vaccine confidence across different educational levels. Generally, vaccine confidence tended to be higher in respondents with undergraduate and postgraduate degrees (see Figure 3). Response differences across educational levels were significant for the question relating to confidence about vaccine safety and quality (H(8)=15.7, p=0.05; Figure 3a), infection prevention (H(8)=21.8, p=0.005; Figure 3b) and transmission prevention (H(8)=25.0, p=0.002; Figure 3c). In addition, there was a significant difference across educational levels in the stated likelihood of respondents getting vaccinated (H(8)=39.1, p<0.0001; Figure 3d), with 92% of master's and PhD students stating they would get vaccinated, compared with 74% of those at NCEA Level 1 and 65% of those with no formal qualification.

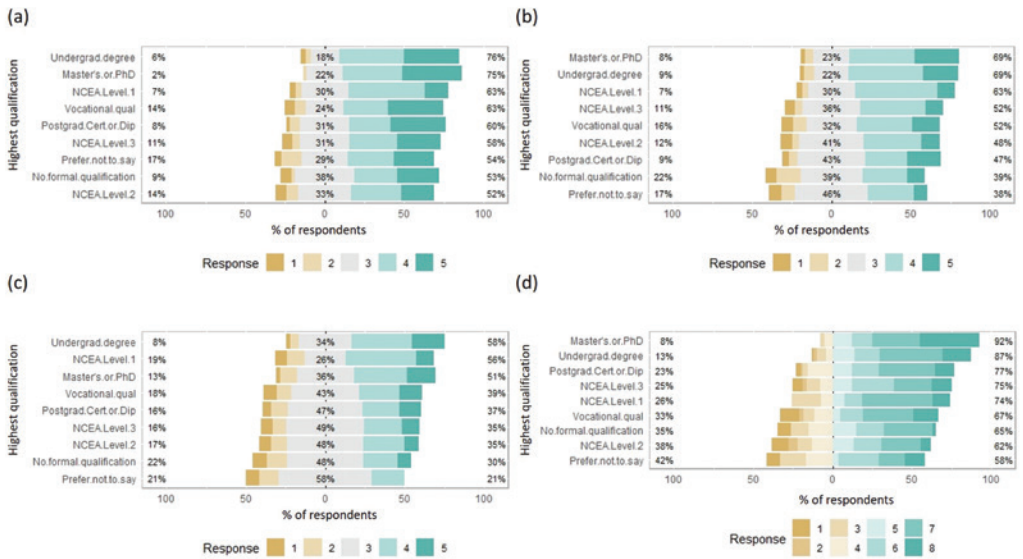

Figure 3. Response to vaccine confidence questions for different educational levels.

(a) Responses to the question, *"Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will meet acceptable safety and quality standards?"* (b) Responses to the question, *"Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will prevent COVID-19 infection?"* (c) Responses to the question, *"Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will prevent you passing infection to others?"* (d) Responses to the question, *"Will you take the Pfizer/BioNTech COVID-19 vaccine?"*

For (a-c) 1=Not confident at all, 2=Not very confident, 3=I'm really not sure, 4=Confident, 5=Very confident. For (d) 1=Definitely not, 2=Most unlikely, 3=Unlikely, 4=Unsure, 5=Likely, 6=Most likely, 7=Definitely, 8=Already vaccinated.

Percentages displayed on the left of the graph indicate % of negative responses, those on the right indicate % of positive responses, and those in the centre indicate neutral responses, if applicable.

Effect of ethnicity on responses

Differences in vaccine confidence and intention to vaccinate were observed between different ethnicities. In response to the vaccine safety and quality question, significant differences in confidence occurred between ethnicities ($H(6)=37.7$, $p<0.0001$; Figure 4a). Māori had the highest proportion of negative or neutral responses, whereas Indian and 'other' had the lowest proportion of negative or neutral responses (21% and 7%, respectively). A similar pattern was observed for the infection prevention question ($H(6)=38.2$, $p<0.0001$; Figure 4b), and transmission prevention question ($H(6)=28.7$, $p<0.0001$; Figure 4c), with Māori showing the lowest proportion of positive responses to both questions. Vaccine uncertainty (proportion of *"I'm really not sure"* responses) was higher for the question of vaccine transmission compared with the safety and infection prevention questions, and this was consistent across all ethnicities. Intention to take the vaccine varied between ethnicities ($H(6)=33.3$, $p<0.001$; Figure 4d). Māori was least likely to take the vaccine, with 40% of responses negative or neutral. All other groups had at least 75% positive responses, with the most positively responding groups being 'other' (93%) and Indian (89%).

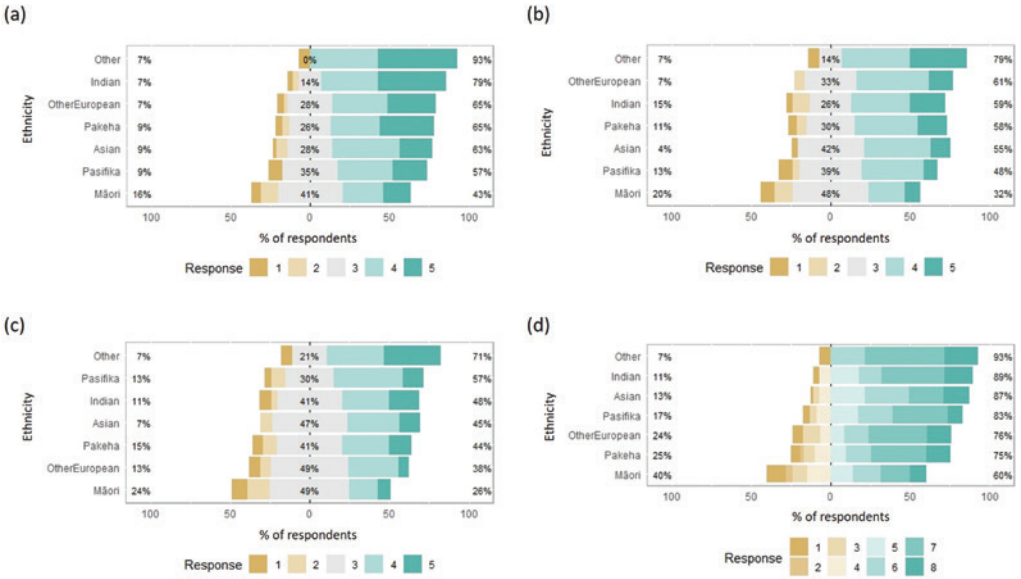

Figure 4. Response to vaccine confidence questions for different ethnicities.

(a) Responses to the question, *"Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will meet acceptable safety and quality standards?"* (b) Responses to the question, *"Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will prevent COVID-19 infection?"* (c) Responses to the question, *"Overall, how confident are you that any COVID-19 vaccine to be used in New Zealand will prevent you passing infection to others?"* (d) Responses to the question, *"Will you take the Pfizer/BioNTech COVID-19 vaccine?"*

For (a-c) 1=Not confident at all, 2=Not very confident, 3=I'm really not sure, 4=Confident, 5=Very confident. For (d) 1=Definitely not, 2=Most unlikely, 3=Unlikely, 4=Unsure, 5=Likely, 6=Most likely, 7=Definitely, 8=Already vaccinated.

Percentages displayed on the left of the graph indicate % of negative responses, those on the right indicate % of positive responses, and those in the centre indicate neutral responses, if applicable.

Effect of dwelling location on vaccine confidence and access

The dwelling location of respondents (large city, regional city, regional town, rural not remote, rural and remote) had no effect on responses to vaccine confidence or likelihood of getting vaccinated.

The five most common access methods were similar across dwelling locations (e.g. my doctor, practice nurse, medical specialist, pharmacy and hospital). However, access providers such as churches, the marae, Māori health providers, local schools, and pop-up services on campus, were used by a higher proportion of respondents in remote rural locations than other locations.

Comparison with influenza vaccine intention

There was a strong association between respondents' intention to receive the influenza vaccine and intention to receive the COVID-19 vaccine ($H(2)=109.7$, $p<0.0001$; Figure 5). Of respondents who had received or planned to receive a flu vaccine, 93% responded positively about their intentions to get a COVID-19 vaccine. Conversely, only

57% intended to or had already received a COVID vaccine for respondents who did not plan to get a flu vaccine.

In response to the question, *"Did you have or are you going to have a vaccination for influenza this year?"* 71% of staff responded with 'yes' or 'maybe' compared with 55% of students.

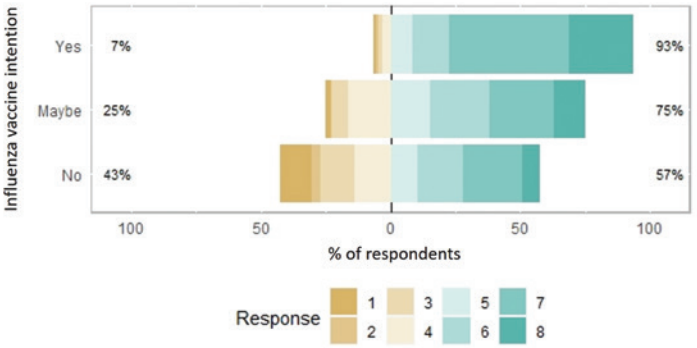

Figure 5. Relationship between COVID-19 and influenza vaccination intention.

Responses to the question, *"Will you take the Pfizer/BioNTech COVID-19 vaccine?"*, grouped by intention to get the flu vaccine: yes, maybe or no; 1=Definitely not, 2=Most unlikely, 3=Unlikely, 4=Unsure, 5=Likely, 6=Most likely, 7=Definitely, 8=Already vaccinated. Percentages displayed on the left of the graph indicate % of negative responses, those on the right indicate % of positive responses.

DISCUSSION

There was an approximate response rate of 12.9% in the current study. The responses have provided an insight into staff and students' attitudes, intentions and readiness toward the COVID-19 vaccination. This information has led to the development of an infographic used throughout Toi Ohomai Institute of Technology, highlighting key findings from the survey.

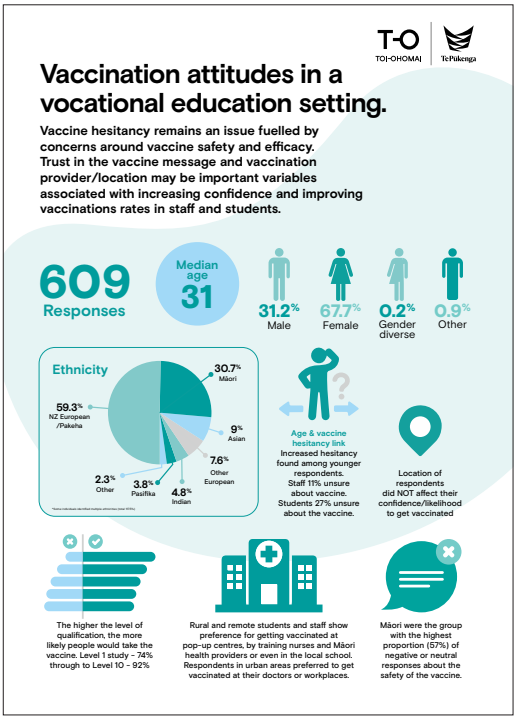

Figure 6. Infographic highlighting the key study findings. Source: Authors

Respondent demographics were reflective of our institute's population demographic with the individual percentages within ± 5%. For example, 31.2% of respondents were male and the actual makeup of our population within the institute at the time of our online questionnaire was 35.7%.

For the *true* statements regarding the safety and public information messages about COVID-19 vaccinations, about one third (6/15) of the statements received agreement from >75% of respondents. However, in many true statements, >25% of respondents disagreed, highlighting a gap in knowledge for these respondents. Some of the questions around safety and public information were quite technical, requiring understanding of the current research and vaccinations in general or relying on the respondents' ability to remember specific technical information (e.g. *"The Pfizer/BioNTech vaccine has been shown to be 95% effective."*).

For the six false statements, respondents mostly disagreed with five of them, indicating the majority of respondents correctly understood many of the messages regarding the safety of the COVID-19 vaccine and could identify misinformation. For example, only 6.6% agreed with the statement *"The COVID-19 vaccine can alter your DNA"*. There was one question where most respondents (84.7%) incorrectly agreed with a false statement *"Those who are pregnant, breastfeeding or think they may be pregnant should talk to the doctor or midwife before having a COVID-19 vaccine."* One possibility for the high rate of agreement with this statement is that many people misunderstood or were not aware of the government's public health messages informing them that the COVID-19 vaccination is safe to have when pregnant or breastfeeding. Vaccine hesitancy may be higher in certain 'special populations' like pregnant women in part due to concerns they are not sufficiently represented in clinical trials (Dodd et al., 2021; Skirrow et al., 2022). However, we acknowledge, it is not incorrect for pregnant and breastfeeding women to discuss any vaccinations with a doctor or midwife to ensure the safety of their baby. It is also possible that the wording of this question may need to be improved to provide the correct intent of the statement is conveyed.

Our findings also highlight areas for improvement in public health messages and campaigns. Many of the statements based on opinion were technically false, such as *"COVID-19 vaccine development was rushed" or "Taking the COVID-19 vaccine may leave my health overall worse."* The majority of respondents disagreed with 17/18 of the statements of opinion, most people agreed with the safety of the vaccine and the importance of taking the vaccine. However, it also indicates that some people still have concerns regarding the vaccine safety, such as the long-term effects from the vaccine (52% agreed with the statement) or unknown side effects (40% agreed with the statement).

Age-related differences in vaccine hesitancy are a well-researched phenomenon with attitudes towards willingness to seek a COVID-19 vaccination consistent with those found among studies of adult populations involving different vaccines. A literature review looking at a range of sociodemographic variables influencing seasonal influenza vaccine hesitancy found that older people, those 65 years and above, were more positively inclined towards having the vaccine than younger age groups (Kini et al., 2022). This review of 39 studies across diverse ethnic groups consistently found those 30 years and younger to be up to 70% more hesitant about receiving an influenza vaccination than older people.

The influenza vaccine is a well-established seasonal preventative measure first introduced for public use in the 1940s (Centers for Disease Control and Prevention, 2019). However, there are similarities between reluctance and acceptance of COVID-19 vaccination. Concerns about the efficacy and quality of the influenza vaccine are responsible for lower acceptance, while greater awareness and understanding encourage less hesitancy among older people (Gazibara et al., 2019).

While education had a small but significant effect on willingness to be vaccinated in this study, a similar relationship is found across other populations and vaccines. A large European study found that those holding a tertiary level qualification were more willing to receive a Covid-19 vaccine with the level of willingness increasing as the level of the qualification advanced (Valckx et al., 2022). The pattern is also seen among parents and caregivers willing to receive an influenza vaccine and to vaccinate children. Those with higher education levels were more likely to be vaccinated and seek an influenza vaccination for their children (Goss et al., 2020).

The location of dwelling in this study had no impact on confidence and likelihood of having a COVID-19 vaccination. However, this may reflect the unique characteristics of the study sample as housing insecurity among more vulnerable populations is associated with a noticeable increase in vaccine hesitancy (Moore et al., 2021).

Those who did not indicate vaccine hesitancy in this study were willing to receive a COVID-19 vaccination from one of the nominated providers for the national campaign while rural dwellers indicated they preferred to access their vaccination from a trusted provider. These perceptions are consistent with Fisher et al. (2021) who indicate that people who are more vaccine hesitant prefer to seek both vaccine information and a vaccination from a trusted healthcare provider in a familiar location.

Respondents who intend to get the COVID-19 vaccine are also more likely to get (or have already received) the influenza vaccine. In contrast, those unsure or who do not intend to get the COVID-19 vaccine are also less likely to get the influenza vaccine. This finding indicates a relationship between overall vaccine intentions, i.e., likely to get both vaccinations or less likely to get both vaccinations (Maor & Caspi, 2022; McSpadden, 2021).

Limitations

One of the current study limitations was the low response rate. The low response rate was possibly due to the time of the year that the survey was distributed. June 2021 was busy for students (e.g., completing assessments and classwork) and staff (e.g., teaching and marking commitments). It may have been better to distribute the survey at a different time of the year to improve the response rate. Weekly reminders could have been automatically set up when students and staff log on to the local intranet to enhance the response rate further.

Another limitation of the current study is the survey design. Respondents had to self-select responses, and there is no way to confirm the data is correct or that the respondents understood the survey intent. The survey could have been pilot tested for reliability by implementing a test-retest validation process. This would determine if the survey was reliable and that responses correlated over time, which would indicate survey stability.

Practical implications

Our findings showed that there were differences in attitudes and intentions towards the COVID-19 vaccine among different groups (e.g., age, education level and ethnicity). Therefore, a *one-size-fits-all* approach to vaccine provision and educational messaging to vocational staff and students is not suitable. To ensure equitable access to vaccines, we must ensure certain groups with low vaccine confidence are appropriately targeted and provisioned.

The increased importance of local healthcare providers (e.g., churches, marae, Māori health providers marae) in rural communities, highlight the importance trust and connection for people in these communities. Therefore, a focus on establishing trust and building relationships between healthcare providers and community may improve vaccine uptake and education, particularly in rural settings. Vocational institutes that have established connections within the regions are well-positioned to provide clear and concise vaccine messaging to their students and staff, and arguably have a social responsibility to do so.

FUTURE RESEARCH OPPORTUNITIES

Our findings highlight a few opportunities for follow-up studies. Our findings have highlighted an imperative to target vaccine educational messaging toward the younger demographic (<35 years), who tended to be more vaccine hesitant. A useful follow-up study could therefore identify the most appropriate and effective format for delivering this messaging to our staff and student (e.g., through social media, on-campus posters, emails).

Our results showed a clear positive relationship between intention to receive the COVID-19 vaccine and intention to receive the influenza vaccine. An interesting question for future investigation would be to look at how the COVID-19 pandemic will affect future uptake of the influenza vaccine. Comparisons of general vaccine uptake in New Zealand, compared with other countries that have been less sheltered from high infection and death rates due to the COVID-19 pandemic would be another intriguing investigation.

CONCLUSION

The location of respondents did not affect their confidence/likelihood to get vaccinated, however, rural and remote students and staff showed a preference for getting vaccinated at pop-up centres, by training nurses and Māori health providers, whereas urban respondents preferred to get vaccinated at their doctors or workplaces.

There was an increased hesitancy found amongst younger respondents, with the higher level of academic qualification obtained leading to increased likelihood of vaccination. Māori had the highest number of negative or neutral responses about the safety of the vaccine.

Vaccine hesitancy remains an issue fuelled by concerns around vaccine safety and efficacy. Trust in the vaccine message and the vaccination provider along with the location/ease to be vaccinated, appear to be important variables associated with increasing confidence and improving vaccination rates in staff and students.

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REFERENCES

Adam, D. (2022). The effort to count the pandemic's global death toll. *Nature, 601*, 312–315. https://doi.org/10.1038/d41586-022-00104-8

Andre, F. E., Booy, R., Bock, H. L., Clemens, J., Datta, S. K., John, T. J., Lee, B. W., Lolekha, S., Peltola, H., Ruff, T. A., Santosham, M., & Schmitt, H. J. (2008). Vaccination greatly reduces disease, disability, death and inequity worldwide. *La vacunación reduce considerablemente la morbilidad, las discapacidades, la mortalidad y las inequidades en todo el mundo,86*(2), 140–146. https://doi.org/10.2471/BLT.07.040089

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B, 57*(1), 289–300. https://doi.org/10.2307/2346101

Bryer, J., & Speerschneider, K. (2016). *Package 'likert'. Analysis and visualization Likert item*. https://cran.r-project.org/web/packages/likert/likert.pdf

Centers for Disease Control and Prevention. (2019). *Influenza historic timeline.* https://www.cdc.gov/flu/pandemic-resources/pandemic-timeline-1930-and-beyond.htm

Dinno, A. (2015). Nonparametric pairwise multiple comparisons in independent groups using Dunn's test. *Stata Journal, 15*(1), 292–300. https://doi.org/10.1177/1536867x1501500117

Dodd, C., Andrews, N., Petousis-Harris, H., Sturkenboom, M., Omer, S. B., & Black, S. (2021). Methodological frontiers in vaccine safety: qualifying available evidence for rare events, use of distributed data networks to monitor vaccine safety issues and monitoring the safety of pregnancy interventions. *BMJ Global Health, 6*(Suppl 2), e003540. https://doi.org/:10.1136/bmjgh-2020-003540

Fisher, K., Nguyen, N., Crawford, S., Fouayzi, H., Singh, S., & Mazor, K. (2021). Preferences for COVID-19 vaccination information and location: Associations with vaccine hesitancy, race and ethnicity. *Vaccine, 39*(45), 6591–6594. https://doi.org/10.1016/j.vaccine.2021.09.058

Goss, M., Temte, J., Barlow, S., Temte, E., Bell, C., Birstler, J., & Chen, G. (2020). An assessment of parental knowledge, attitudes, and beliefs regarding influenza vaccination. *Vaccine, 38*(6), 1565–1571. https://doi.org/10.1016/j.vaccine.2019.11.040

Horizon Research. (2020). *Covid-19 vaccine.* https://www.health.govt.nz/system/files/documents/pages/horizon_research_covid-19_vaccine_report_december_2020_final.pdf

Horizon Research. (2021a). *At a glance: COVID-19 vaccine research insights.* https://www.health.govt.nz/system/files/documents/pages/COVID-19-vaccine-research-insights-march-2021.pdf

Horizon Research. (2021b). *COVID-19 vaccine. General population survey March 2021.* https://www.health.govt.nz/system/files/documents/pages/horizon-research-COVID-19-vaccine-mar2021.pdf

Kini, A., Morgan, R., Kuo, H., Shea, P., Shapiro, J., Leng, S. X., Pekosz, A., & Klein, S. L. (2022). Differences and disparities in seasonal influenza vaccine, acceptance, adverse reactions, and coverage by age, sex, gender, and race. *Vaccine, 40*(11), 1643–1654. https://doi.org/10.1016/j.vaccine.2021.04.013

MacDonald, N. E. (2015). Vaccine hesitancy: Definition, scope and determinants. *Vaccine, 33*(34), 4161–4164. https://doi.org/10.1016/j.vaccine.2015.04.036

Malik, S. (2021, 02/01/). COVID-19 vaccine hesitancy worldwide: A concise systematic review of vaccine acceptance rates. *Vaccines, 9*(160), 160–160. https://doi.org/10.3390/vaccines9020160

Maor, Y., & Caspi, S. (2022). Attitudes towards influenza, and COVID-19 vaccines during the COVID-19 pandemic among a representative sample of the Jewish Israeli population. *PLoS ONE, 17*(2), 1–12. https://doi.org/10.1371/journal.pone.0255495

McSpadden, J. (2021). Vaccine hesitancy among older adults, with implications for COVID-19 vaccination and beyond. *AARP Public Policy Institute.* https://doi.org/https://doi.org/10.26419/ppi.00123.001

Moore, J., Gilbert, K., Lively, K., Laurent, C., Chawla, R., Li, C., Johnson, R., Petcu, R., Mehra, M., Spooner, A., Kolhe, R., & Ledford, C. (2021, 1–15). Correlates of COVID-19 vaccine hesitancy among a community sample of African Americans living in the Southern United States. *Vaccines, 9*(8), 879. https://doi.org/10.3390/vaccines9080879

Perkins, R. B., Zisblatt, L., Legler, A., Trucks, E., Hanchate, A., & Gorin, S. S. (2015). Effectiveness of a provider-focused intervention to improve HPV vaccination rates in boys and girls. *Vaccine, 33*(9), 1223–1229. https://doi.org/10.1016/j.vaccine.2014.11.021

R Core Team. (2021). *R: A language and environment for statistical computing. R:Foundation for statistical computing, Vienna, Austria.* https://www.R-project.org/

Rodrigues, C., & Plotkin, S. (2020). Impact of vaccines; Health, economic and social perspectives. *Frontiers in Microbiology, 11.* https://doi.org/10.3389/fmicb.2020.01526

Rosenblum, H. G., Gee, J., Liu, R., Marquez, P. L., Zhang, B., Strid, P., Abara, W. E., McNeil, M. M., Myers, T. R., Hause, A. M., Su, J. R., Markowitz, L. E., Shimabukuro, T. T. & Shay, D. K. (2022). Safety of mRNA vaccines administered during the initial 6 months of the US COVID-19 vaccination programme: An observational study of reports to the Vaccine Adverse Event Reporting System and v-safe. *The Lancet Infectious Diseases.* https://doi.org/10.1016/S1473-3099(22)00054-8

Skirrow, H., Barnett, S., Bell, S., Riaposova, L., Mounier-Jack, S., Kampmann, B., & Holder, B. (2022). Women's views on accepting COVID-19 vaccination during and after pregnancy, and for their babies: A multi-methods study in the UK. *BMC pregnancy and childbirth, 22*(1), 1–15. https://doi.org/10.1186/s12884-021-04321-3

Swaney, S. E., & Burns, S. (2019). Exploring reasons for vaccine-hesitancy among higher-SES parents in Perth, Western Australia. *Health Promotion Journal of Australia, 30*(2), 143–152. https://doi.org/10.1002/hpja.190

Thaker, J. (2021). The persistence of vaccine hesitancy: COVID-19 vaccination intention in New Zealand. *Journal of Health Communication, 26*(2). https://doi.org/https://doi.org/10.1080/10810730.2021.1899346

Valckx, S., Crèvecoeur, J., Verelst, F., Vranckx, M., Hendrickx, G., Hens, N., Van Damme, P., Pepermans, K., Beutels, P., & Neyens, T. (2022). Individual factors influencing COVID-19 vaccine acceptance in between and during pandemic waves (July–December 2020). *Vaccine, 40*(1), 151–161. https://doi.org/10.1016/j.vaccine.2021.10.073

World Health Organization. (2021). *The impact of COVID-19 on health and care workers: A closer look at deaths* (No. WHO/HWF/WorkingPaper/2021.1). Geneva World Health Organization.

WHO SAGE Working Group. (2014a). *Report of the SAGE Working Group on vaccine hesitancy.* https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf

WHO SAGE Working Group. (2014b). *Strategies for addressing vaccine hesitancy – A systematic review.* https://www.who.int/immunization/sage/meetings/2014/october/3_SAGE_WG_Strategies_addressing_vaccine_hesitancy_2014.pdf

https://doi.org/10.34074/scop.3007016

MENTAL HEALTH AND WELLBEING OF TERTIARY LEARNERS: WHAT DO WE NEED TO KNOW?

Suzie Bartlett and Jean Ross

Given the global prevalence and burden of mental illness, it is likely there would be a significant number of learners with emotional problems enrolled in tertiary study, both with a formal diagnosis and with no formal diagnosis but with disabling symptoms.

(Storrie, Ahern & Tuckett, 2010, p.2)

INTRODUCTION

Student (learner) engagement in tertiary education has never been so high in the history of education (Grøtan, Sund & Bjerkeset, 2019). What does this mean? What does this entail for learners and organisations? Is this sustainable? Storrie et al., in their quote above alert us to the growing global mental illness of learners connected with tertiary study. In this paper we acknowledge Storrie et al's (2010) concerns while offering suggestions that could improve the health of learners and sustain their tertiary study.

Tertiary education refers to all formal post-secondary education, including public and private universities, colleges, technical training institutes, and vocational schools (World Bank, 2022). These organisations all deliver a variety of educational options, often in flexible ways to meet the needs of adult learners including, online and distance learning (NZQA, 2022). Although some learners prefer face to face teaching, Hsu and Shiue (2005) point out that distance learning programmes can serve geographically diverse learners and increase access to programmes that would otherwise have been limited to on-campus students using telecommunications and information technologies. These technologies, for example can also be used for student support and online counselling.

There are currently around 200 million tertiary education students studying in the world, an increase from 89 million in 1998 (World Bank, 2017). This rise in the populace of tertiary learners corresponds with a rise in the numbers of mental ill-health of learners with significant numbers presenting to tertiary support services, and/or academic staff (Bartlett, 2022). Contributing factors leading to experiencing poor mental health and wellbeing for example, can be financial or social pressures (a sustainable concern) which can put learners at added risk (Thorley, 2017). Learners therefore need to be able to effectively negotiate these risks to ensure educational success and maintain their mental health at the same time (Bartlett, 2022). According to Slavin, Schindler and Chibnall (2014) this is evident in the high levels of mental ill-health reported by learners, internationally, nationally, and locally and the extent to which tertiary providers have experienced pronounced increases in the number of students seeking mental health support.

MENTAL HEALTH

Terminology is important to understand in the complex speciality of mental health. Correct terminology can reduce stigma and increase awareness of mental health. *Mental health, wellness and mental ill-health* are key terms and are defined below.

The World Health Organisation (2022, p. 1) constitution states:

> *"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."*

An important implication of WHO's definition is that mental health is more than just the absence of mental disorders or disabilities.

Mental health is defined as a state of well-being in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and is able to contribute to his or her community (World Health Organisation, 2022).

Wellness is considered, "an active process through which people become aware of, and make choices toward, a more successful existence" (Stoewen, 2016, p. 983). This definition is based on three tenets that:

- wellness is considered a conscious, self-directed, and evolving process of achieving full potential,
- wellness is multidimensional and holistic, encompassing lifestyle, mental and spiritual well-being, and the environment,
- wellness is positive and affirming.

Stoewen (2016) further expresses that the difference between health and wellness, is "health is a state of being, whereas wellness is the state of living a healthy lifestyle. Health refers to physical, mental, and social well-being; wellness aims to enhance well-being" (p. 983). Within the tertiary learning environment, given numbers of learners presenting with poor mental health is on the rise (Bartlett, 2022; Storrie et al., 2010), it would make sense to strategise around enhancing learners' mental health and wellbeing, whilst they are undertaking academic study to promote and support their retention and success.

Understanding mental illness and mental ill-health is necessary to accommodate the numerous interprofessional relationships who work individually or collectively with learners.

Mental ill-health is characterised by the World Health Organisation (2022) as a clinically significant disturbance in an individual's cognition, emotional regulation, or behaviour. It is usually associated with distress or impairment in important areas of functioning. Importantly Te Hiringa Hauora, Health Promotion Agency (2021) highlight that poor mental health does not necessarily come with a diagnosis of mental illness, whether people meet the criteria for a medical diagnosis, their mental health can be poor.

Mental ill-health is defined by EVERYMIND as "The broad term, often used as an umbrella term, that includes both mental illness and poor mental health" (2022, para.2) mental health can include prolonged high stress levels, general unhappiness with life, and ongoing low levels of depression and anxiety and can interfere with a person's cognitive, emotional, or social abilities. Some people who experience poor mental health for a long time, or who are highly distressed, may meet the criteria for being diagnosed with a mental illness (Te Hiringa Hauora, Health Promotion Agency, 2021).

Poor mental health and wellbeing can also affect a learner's academic performance and their desire to remain in higher education (NZUSA, 2018). Slavin et al. (2014) report higher incidence of poor mental health in tertiary students than the general population. These findings identify that simply being a tertiary student may constitute a risk factor for mental health problems.

We also note that affective and anxiety disorders are common presentations among tertiary learners. Academic stressors that have been identified among learners include examinations and assignments, large workloads, and lack of free time (Bartlett, 2022). Students, who are academically resilient, can overcome adversity in their lives and still succeed in their programme of study. In addition to academic pressure, financial, social, and relationship pressures become heightened and often the learner is away from home for the first time, they can have a lack of connectedness causing increased social isolation, they can struggle with the higher level of study, and they are at the age where the onset of some major mental illness symptomology can start to occur (Bartlett, 2022). It is unsurprising then, that learners can start to show signs of mental ill-health and then present to support services or academic staff in a state of distress.

Stallman and Shochet (2009) state the impact of tertiary study on learners may be contributing to poor mental health and that there is potential that tertiary institutions are indeed contributing to learner mental ill-health. *The Kei Te Pai? Survey* (2018) conducted by the New Zealand Union of Students Association (NZUSA) was the first of its kind gaining insights into the mental health and wellbeing of tertiary students enrolled at universities and polytechnics in New Zealand. NZUSA (2018) propose students' mental health was declining whilst undertaking academic study within the New Zealand context.

SUSTAINABILITY AND MENTAL HEALTH

Mental wellbeing is a natural part of an individual's health and in particular tertiary learners' engagement with tertiary organisations. Sustaining and improving the mental wellbeing of tertiary learners engages with an interprofessional approach, we strongly suggest all tertiary organisations play their part in the sustainable mental wellbeing of learners. However, we recognise the difficulty amongst health care disciplines that the concept of sustainability remains ambiguous (McMillan, 2014). Acknowledging that there is a distinction between sustainability and sustainable development may assist in the ongoing debate about sustainability and health. Sustainability is commonly understood as a destination implying a means to an end, while sustainable development is a means of getting there, problem solving, goal setting and critical thinking. Four fundamental concepts of sustainable development include health; politics; capitalism and climate change, and when linked together is where sustainable development forms the foundation of interprofessional practice and mental health care. We recommend tertiary organisations consider these sustainable development concepts as they work to improve and maintain the mental health of tertiary learners. Firstly, promoting learners to reflect on their own resilience; secondly, establishing a sustainable curriculum design and thirdly, facilitating a mental well-health sustainable environment. We further expand on these in our recommendations below:

Promoting learners to reflect on their own resilience:

- encourage potential learners to identify and develop their own protective factors prior to embarking in tertiary study, this may help them understand the areas where strategies for developing academic resilience may be useful. For example, if a learner finds it challenging to leave their home environment due to strong family/whānau/community connections being the main protective factor, studying with a local tertiary provider may be a more suitable option to advantage their learning (Bartlett, 2022). Staying connected to family/whanau at a local tertiary provider could also protect against social isolation.
- support the learner who may have many stressors and a high level of resilience including understanding of their protective factors, academic success and good mental health and wellbeing, then coping in the face of adversity is much more likely (Bartlett, 2022). Crane and Searle (2016) suggest events stemming from stressors and adversity can have long term significant effects on a person's mental health and wellbeing. If a learner has many stressors including academic failure, poor family/social connections, financial burden and /or mental ill-health coupled with poor resilience, this may cause failure to cope (Crane & Searle, 2016),

- supporting learners in developing strategies for resilience, a vital tool when pursuing academic study. Whilst help seeking is deemed a positive strategy for tertiary learners, resilience is also a key concept (Bartlett, 2022),
- there are different ways in which academic staff in tertiary organisations can build good foundations for resilience in learners. These include developing student's self-confidence by individualising tasks where possible, enhancing self-determination through planning and persistence, and encouraging feedback that does not place too much emphasis on comparison with peers (Martin & Marsh, 2006). It is important to note however, an increased incidence of learners presenting with mental illness, or poor mental health is not necessarily a negative. A higher number of learner presentations could also be a consequence of learners feeling more comfortable in presenting to tertiary support staff for assistance due to a decrease in stigma in society, and /or their tertiary institution (Bartlett, 2022). Learners may feel that discussing their lived experience is a proactive step, for staff to understand them and provide support where needed (Tinklin, Riddell & Wilson, 2005). Higher numbers of learner presentations can therefore be viewed as a positive outcome.

Establishing a sustainable curriculum design:

- create safe and supported learning spaces to promote enhanced wellbeing of learners,
- recognise learners' potential stressors and implement curricula changes that are designed to address these' stressors.

Facilitating a mental well-health sustainable environment:

- implementation of mental health support at tertiary institutions, confidentiality, location, times, convenience of office hours, and financial cost are all important to consider,
- embrace technology (apps/online CBT/self-help websites etc.) which has the potential to play a significant role in improving mental health and wellbeing. The use of technology could be useful in health promotion, mental health literacy, and encouraging at-risk learners to seek support and treatment (Farrer et al., 2013). Online interventions related to mental health and wellbeing can be easily accessed, are cost effective, less stigmatising (Farrer et al., 2013) and can be executed in the privacy of one's own home, in their own time, at their own pace. Mental health literacy is reported by to be positively correlated with help seeking behaviour in university students (Gorczynski, et al., 2017). Initiatives to promote mental health literacy in learners may therefore be useful.

Furthermore, it is therefore imperative that there are strategies that tertiary organisations can implement to ensure a sustainable population of tertiary learners by enhancing positive mental health and wellbeing whilst undertaking academic study. In this paper we have offered solutions to enhance the mental health and wellbeing of tertiary learners.

CONCLUSION

The age of onset of poor mental illness is equivocal to the age many students commence tertiary study, while the number of tertiary learners has increased, we can therefore deduce that there could be an increase in the number of students presenting with poor mental health. Learners with mental ill-health often appear to struggle in the tertiary environment. To support learners suffering from emotional stresses or mental ill-health whether formally diagnosed or undiagnosed, support and academic staff of tertiary organisations need to have a better understanding of the learners' triggers including the barriers to seeking help due to stigma, lack of knowledge about the services available, and lack of resources, feelings of hopelessness, stress and COVID-19 pandemic issues. The key for learners staying mentally well during academic study is for tertiary organisations to engage with the sustainable development concepts suggested in this paper as they work to improve and maintain the mental health of tertiary learners.

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REFERENCES

Bartlett, S. (2022). *Tertiary learner mental health and wellbeing: The development of a national framework.* (Unpublished Doctoral Thesis, Otago Polytechnic, Dunedin, New Zealand).

Crane, M. F., & Searle, B. J. (2016). Building resilience through exposure to stressors: The effects of challenges versus hindrances. *Journal of Occupational Health Psychology, 21*(4), 468–479.

EVERYMIND (2022) *Changing lives through world leading prevention programmes.* https://everymind.org.au/

Farrer, L., Gulliver, A., Chan, J. K., Batterham, P., Reynolds, J., Calear, A., Tait, R., Bennett, K., & Griffiths, K. (2013). Technology-based interventions for mental health in tertiary students: Systematic review. *Journal of Medical Internet Research, 15*(5). doi:10.2196/jmir.2639

Gorczynski, P., Sims-Schouten, W., Hill, D.M., & Wilson, C. (2017). Examining mental health literacy, health seeking behaviours, and mental health outcomes in UK university students. *Journal of Mental Health Education, Training and Practice, 12*(2).

Grøtan, K., Sund, E. R., & Bjerkeset, O. (2019). Mental health, academic self-efficacy and study progress among college students – The SHoT Study, Norway. *Frontiers in Psychology.* https://doi.org/10.3389/fpsyg.2019.00045

Hsu, Y., & Shiue, Y. (2005). The effect of self-directed learning readiness on achievement comparing face to face and two-way distance learning instruction. *International Journal of Instructional Media, 32*(2), 143–156.

Martin, A. J., & Marsh, H. W. (2015). Academic resilience and academic buoyancy: Multidimensional and hierarchical conceptual framing of causes, correlates and cognate constructs. *Oxford Review of Education, 35*(3), 353–370.

McMillan, K. (2014). Sustainability: An evolutionary concept analysis. Exploring nursing's role within the sustainability movement. *Journal Advanced Nursing 70*(4), 756–767.

New Zealand Union of Students' Associations (2018). *Kei Te Pai? Report on Student Mental Health in Aotearoa.* Author, Wellington. https://static1.squarespace.com/static/56a801c4c21b869a7c0c8cb7/t/5b4e98d2758d468c0fc75fff/1531877600011/Kei+Te+Pai+Report+on+Student+Mental+Health.pdf

NZQA (2022) *Tertiary education.* https://www.nzqa.govt.nz/qualifications-standards/understanding-nzqf/tertiary-education/

Slavin, S., Schindler, D., & Chibnall, J. (2014). Medical student mental health 3.0: Improving student wellness through curricula changes. *Academic Medicine, 89*(4), 573–577. doi: 10.1097/ACM.0000000000000166

Stallman, M., & Shochet, I. (2009). Prevalence of mental health problems in Australian university health services. *Australian Psychologist, 44*(2) 122–127.

Stoewen, D. L. (2016). Wellness at work: Building healthy workplaces. *The Canadian Veterinary Journal, 57*(11), 1188–1190.

Storrie, K., Ahern, K., & Tuckett, A. (2010). A systematic review: Students with mental health problems – A growing problem. *International Journal of Nursing Practice, 16,* 1–6.

Te Hiringa Hauora (2021). *Mental health and mental illness*. https://wellplace.nz/facts-and-information/mental-wellbeing/mental-health-and-mental-illness/

Tinklin, T., Riddell, S., & Wilson, A. (2005). Support for students with mental health difficulties in higher education. In S. Riddell, T. Tinklin & A. Wilson (Eds). *Disabled students in higher education,* (pp. 495–499). London; Routledge.

Thorley, C. (2017). Not by degrees: *Improving student mental health in the UK's universities. Institute for public policy research.* http://www.ippr.org/research/publications/not-by-degrees

World Bank (2017). *Understanding poverty topics, higher education.* https://www.worldbank.org/en/topic/tertiaryeducation#:~:text=Today%2C%20there%20are%20around%20200,from%2089%20million%20in%201998

World Bank (2022). *Understanding poverty topics, higher education.* https://www.worldbank.org/en/topic/tertiaryeducation#:~:text=Tertiary%20education%20refers%20to%20all,training%20institutes%2C%20and%20vocational%20schoW

World Health Organisation (2022). Mental health. https://www.who.int/westernpacific/health-topics/mental-health

https://doi.org/10.34074/scop.3007007

FLIPPING LECTURES: SUSTAINABLE TEACHING AND LEARNING IN AN UNDERGRADUATE NURSING PROGRAMME

Kerry Davis

INTRODUCTION

In this article, I provide examples of methods that I have employed in an attempt to flip classroom learning, when teaching in a New Zealand undergraduate nursing programme. Some examples have been developed intuitively, while others have been sourced from literature or discussion with colleagues. What follows is a by-no-means exhaustive list of activities that I have employed successfully over the past two years, to flip lectures. The intent is to encourage the reader to build up their creative toolbox, to enhance their own effective and sustainable teaching and learning practice. This paper provides an insight into different methods of flipping the classroom, with each method being presented with a title and a summary of what the exercise entails.

SUSTAINABILITY

Sustainability in contemporary learning and teaching practice is in everybody's best interest. Learners desire teaching practice that is dynamic yet clearly meets learning outcomes. Lecturers desire to see learners grasp essential concepts while engaging with class material, colleagues and themselves as facilitator (Youhasan et al., 2021). Despite these aspirations, as Microsoft PowerPoint celebrates its 25th birthday in 2022, the PowerPoint presentation remains a comfortable default for many lecturers in the classroom.

The Flipped Classroom (FC) is promoted in modern pedagogy as a redesign of the classroom that fosters student-centred learning through three key components: pre-classroom activity; in-classroom activity and post-classroom activity (Youhasan et al., 2021). Ozbay and Çinar (2020) completed a systematic review of 7,470 articles involving the flipped classroom in undergraduate nursing curricula, resulting in a detailed comparison of 24 papers. Overall, the papers promoted a flipped approach as a means of increasing the skill competence, satisfaction, and collaboration of student nurses. Several writers support FC as enhancing the ability of learners to self-pace and to interact more fully with content, when compared with traditional methods of teaching decontextualized knowledge (Joseph et al., 2021).

An essential first step in flipping the classroom is the decluttering of content, so that essential content is retained but with the inclusion of 'white space'. White space is the antithesis of a feverishly delivered PowerPoint presentation or didactic lecture. The concept of white space in education is about "deliberately (and strategically) leaving 'room for thinking', 'room for creativity', 'room for learning"' (Hall, 2017, p. 10). But how does a lecturer practically design this space and flip the classroom to engage learners with content and deep learning experiences? While many readers may lecture in non-nursing programs, I believe that much of what follows is transferable to alternative settings. Have a go – it's flipping awesome!

Speed dating

Paired learners have 10 minutes to roleplay a scenario, such as a nurse providing feedback to a colleague on clinical practice that does not meet an expected standard. After 10 minutes, one person in the pair shifts along one seat to a new partner and attempts a different feedback scenario. This exercise provides an opportunity for communication practice and problem solving in a low stakes role-play. The exercise is is followed by a guided debrief with the facilitator of the session.

Sequencing

Rather than providing lists of important information to learners, they are presented with an 'out-of-order' list that they must correctly sequence with a rationale for their decision. An example of this is the correct sequence when applying Personal Protective Equipment (PPE), a term that we have all become familiar with, during the Covid-19 pandemic.

Mix n' Match magic

Learners consider clinical cases from decisions of the New Zealand Health and Disability Commissioner, then match each case with the professional codes or legislation that were breached. Learners go on to identify the magic (safeguards) that could have protected the patient and health practitioner, had they been employed. Wider discussion on mitigation of similar breaches follows.

Figure 1. Mix n' Match Magic (Source: Author)

Do you see what I see?

Learners study an image of a patient with a particular clinical condition, such as an older gentleman in respiratory distress, leaning forward over a table (the tripod position) to assist his breathing. In groups, learners discuss what the patient might be thinking, feeling, saying or doing. Wider discussion then underscores the importance of critical thinking when presented with clinical cases.

Sensory tables

A sensory table is created to foster active immersive learning, for example prior to clinical placement in an aged residential care facility. Learners explore objects that might typically be found in a resident's bedroom, including theatre tickets, a razor strop, crafts and items of religious or cultural significance. Learners actively explore each object, immersed in music of the era including Vera Lynn (We'll Meet Again), Jimmy Durante (I'll Be Seeing You) and the Howard Morrison quartet (Hoki Mai). Learners explore each item and it's possible purpose, followed by a discussion on the privileges and responsibilities that accompany us as we enter a resident's personal space and establish what matters to each of them.

Visual props are also powerfully employed in a workshop on elder abuse. A bedside table serves as a centre piece, covered in a handbag and perfume bottle, a fedora hat and cane. Once again, learners are reminded of the intimate moments where trust is built and resident's concerns for their safety may be divulged.

Figure 2. Sensory table (Source: Author)

From the archives

Learners are presented with an historical account or a picture book story of a patient experience and unpack factoids contained within it. One class reviewed the ladybird book 'The Nurse' where a perioperative journey was described.This self-paced exercise fostered deeper discussions that included gender bias, advances in sedation and initiatives such as 'walking to theatre'.

Book group

Learners review contemporary books or poems to foster an understanding of the art of nursing, linked to central content such as 'breaking bad news' (Being mortal, by Atul Gawande), empathy (To Kill a Mockingbird, by Harper Lee) or 'locked-in-syndrome' (The diving bell and the butterfly, by Jean-Dominique Bauby). Learners also share literature that they have encountered around the topics discussed.

Fill in the gaps

Reinforce the connection between head and hand by de-cluttering notes and providing diagrams with labels missing or 'fill in the blank', to foster active note taking.

Dual coding

When learning about a professional clinical guideline, learners produce symbols or diagrams as visual representations of key messages. Dual coding is fun and reinforces learning of new concepts, as words and visuals powerfully combine and cater for varying learning styles (Mayer & Anderson, 1992). Learners then explain their diagrams, many creating powerful symbols such as breastplates and shields, cogs and wheels, hands and hearts.

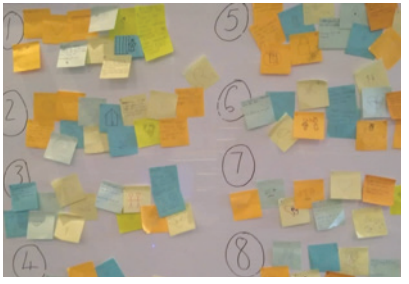

Figure 3. Dual coding (Source: Author)

Interactive case study

Classes are divided into short sections of lecturer led presentations (10 minutes) followed by an activity to foster ethical decision making. The relevance of what is being learned for future practice is stressed. One ethical conflict has been introduced with deliberate pauses for learners to identify the ethical dilemma then discuss likely consequences of alternative interventions.

Media studies

As a pre-classroom activity, learners in the Senior Person's Health course each locate one contemporary written or media portrayal of seniors. Each learner presents their article to the wider group and the group identifies the dominant discourse contained within it. A journalist (by invitation) joins the class and discusses bias in the media and the factors that drive a decision to view a story as 'newsworthy' or not.

Figure 4. Media studies
Source: Nanje Snyman (published with permission)

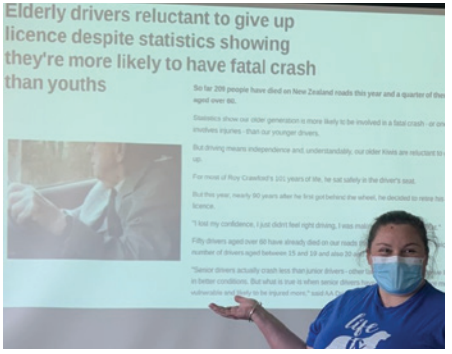

Figure 5. Media studies
Source: Elizabeth Duxbury (published with permission)

Finding fault

Learners are provided with medication charts that contain deliberate prescribing or administration errors. Learners must locate the errors and identify what step in medication vigilance has been missed in each situation.

Breaking the ice

Have some fun as learners interact with content. In the Senior Person's Health course icebreaker, learners are presented with a brown paper bag containing one or two items that a resident in an Aged Residential Care (ARC) facility has chosen to accompany them on a picnic outing. The learner's challenge is to review a list of residents on the excursion and identify who each bag belongs to. Items range from medications to bereavement cards or continence aids. Guided debrief includes discussion around assessment cues, unconscious bias and links to pathophysiology.

Figure 6. Māoritanga moment (Source: Author)

Māoritanga moment

When introducing international candidates for nursing registration to the Nursing Council of New Zealand (NCNZ) Code of Conduct, each candidate selects a Hei Tiki or Hei Pikorau gift tag from a kete. In Māori mythology, hei tiki represents the first created person while hei pikorau (twist) represents the path of life and loyalty. The candidates write one professional aspiration on the back of their tag, relating to the NCNZ Code of Conduct. Candidates then carry their tag on their person on their upcoming clinical placement. This activity links professionalism to reflective practice and fosters knowledge of te reo Māori and Tikaka Māori as outlined in Otago Polytechnic's Māori Strategic Framework, Te Rautaki Māori ki (2020-2022).

Health and Disability (HDC) Cluedo

Learners solve medication error 'crimes', including the location of the crime, suspects, and potential weapons. The game fosters 'noticing' of important cues. One example is the case of a caregiver in an ARC facility, situated in the dining room, at breakfast time, holding a bag of bread. Upon further exploration the learners discover that the caregiver became distracted while making toast and serving breakfast, while also administering morning medications.

It's in the (sick) bag

At the conclusion of a patient safety lecture, learners select from 12 possible bags and attempt to answer the questions contained within them. Airline motion sickness bags are used in acknowledgement of the leadership shown by the aviation industry in the mitigation of systems failures. Each question reinforces an important factor in medication safety vigilance, while learners have fun guessing the correct answer.

Crack the code

Small groups of learners are assigned one of eight principles contained in the Nursing Council of New Zealand (NCNZ) Code of Conduct for Nurses (2012). Each group provides a clinical example of that principle working well in practice and a further example of what a breach of that principle might look like. Wider discussion engages the whole group with all eight principles.

Special guests

Flip the classroom by inviting health consumers to engage in a Question and Answer (Q & A) session with learners. When preparing for a clinical placement in an aged-care facility, learners enjoy a 30-minute Q&A with a 93-year-old woman who lives independently. Questions elicit rich information about the complexities of self-administering medication, navigating community services and accessing the healthcare system. Heidke, Howie, and Ferdous suggest that "It is a challenge for educators to teach empathy about a particular population group without the lived experience of the people central to the interaction" (2018, p.31). Q & A in this context provides that lived experience. Similarly, when exploring 'lobbying for change' in the evidence-based nursing course, a pre-classroom activity involves review of a petition to the health select committee, around waiting times for housing modification for disabled people. In class, the learners meet the petitioner, Joshua Perry, and

ask about his experience with the lobbying process and life in a wheelchair. This Q&A brought humanity to what might have remained an academic exercise.

Figure 7. Disability lobbyist. Source: Joshua Perry (published with permission)

Host a debate

Flipping the classroom to a learner debate encourages learners to explore multiple perspectives on an issue. A lecture on the End-of-Life Choice Act (2019) was complemented by a debate where 'white space' was created for learners to consider opposing perspectives before debating both liberal and conservative viewpoints, in the classroom.

Manager for a day

After a short presentation on successful new staff induction, learners are presented with fictional curricula vitae of two international nurses, starting in their facility. Learners work in pairs to individualise an induction checklist and tailor an orientation package for each nurse based on their prior experience, strengths, and the needs of the facility.

Role-play

In an aged-care simulation involving a gentleman with acute delirium and polypharmacy, pre-classroom activity includes review of relevant articles, scripts for each character and an approved tool for the assessment of acute delirium. Roles include the older couple presenting to a rural General Practice, a student nurse, preceptor and observer. In the role-play, the student nurse interviews the couple and completes the delirium assessment, employing interview and paraphrasing techniques before phoning the General Practitioner. Learners gain confidence with telephone handover then participate in a debrief, guided by the facilitator, which includes discussion of Medicines Review (MR) and tips for distinguishing delirium from dementia or depression.

The eyes have it

In-class activities such as empathy-scoring foster self-awareness. The online 'Reading the Mind in the Eyes Test' measures situational empathy, with learners viewing ten pairs of eyes then attempting to match the correct emotion to each expression. This activity underscores the importance of reading facial expression and non-verbal communication cues as a vital nursing skill.

CONCLUSION

This paper has provided a range of activities, designed to flip the undergraduate nursing classroom into a more interactive, student-led space. Anecdotally these activities engage learners and help to sustain teaching practice. Sustainable teaching is also augmented by participation in communities of practice, such as online practice forums or social media networks. Whether it's sharing pedagogy or practical exercises, collaboration with like-minded colleagues can revitalise your teaching practice. I'm currently subscribed to breakoutRN, a network of educators, accessed at http://www.breakoutRN.com/. My next project is the design of an escape room, as an active learning strategy for clinical decision making. Learning (and learning to teach) is lifelong and the possibilities are flipping endless.

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REFERENCES

Hall, S (2017). The white space. *The Learning Teacher Magazine, 8*(1), 10–11.

Heidke, P., Howie, V. & Ferdous, T. (2018), Use of healthcare voices to increase empathy in nursing students. *Nurse Education in Practice 29,* 30–34.

Joseph, M.A., Roach, E.J., Natarajan, J., Karkada, S. & Cayaban, A.R.R (2021). Flipped classroom improves Omani nursing students' performance and satisfaction in anatomy and physiology. *BioMed Central Nursing, 20,* 1. https://doi.org/10.1186/s12912-020-00515-w

Mayer, R.R., & Anderson, R.B. (1992). The instructive animation: Helping students build connections between words and pictures in multimedia learning. *J. Journal of Educational psychology, 4,* 444–452.

Nursing Council of New Zealand (2016). *Code of conduct for nurses,* Wellington, New Zealand, 1–48.

Otago Polytechnic: Te Kura Matatini ki Ōtāgo. (2020-2022) *Māori Strategic Framework – Te Rautaki Māori ki,* 1–16. https://online.op.ac.nz/assets/K04298_2020-MaoriStrategicFramework_WEB.pdf

Ozbay, O. & Çinar, S. (2021). Effectiveness of flipped classroom teaching models in nursing education: A systematic review. *Nurse Education Today, 102,* 1–16.

Youhasan, P., Chen, Y., Lyndon, M. & Henning, M.A. (2021). Exploring the pedagogical design features of the flipped classroom in undergraduate nursing education: A systematic review. *BioMed Central Nursing, 20,* 50. https://doi.org/10.1186/s12912-021-00555-w

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SUSTAINABILITY: REFLECTIONS ASSOCIATED WITH WATER

Kevin Miles

In *Designing for Sustainability* Nathan Stegall identifies that a sustainable society requires a philosophy that can be seen as a "hierarchy of four interconnected, hierarchal components: a philosophy of resources, a philosophy of form and function, a philosophy of purpose, and a philosophy of spirit... At the top of the hierarchy is an encompassing philosophy of spirit; the fundamental goal that we hope to accomplish through design."[1] While David Orr describes this encompassing new spirit as "driven by the sense of wonder, the sheer delight in being alive in a beautiful, mysterious, bountiful world."[2] This philosophy of spirit is the driving force behind ecological sustainability rather than supporting a purely economical sustainability, and nowhere is this more inherent and more divisive than our relationship to life in the world's oceans. To rethink our relationship to oceanic things by stepping outside our normal understanding of them, experiencing them with a sense of ecstatic, post-phenomenological wonder, such an approach may be a way of developing our understanding towards this important new philosophy.

Thirty years on from Orr's *Ecological Literacy* the oceans are on the brink of a new form of industrial exploitation in the form of ocean floor mining, whose impact upon deep sea ecologies is unknown and the emergent industry currently without regulation.[3] As Orr indicated then, "the crisis of sustainability, the fit between humanity and its habitat, is manifest in varying ways and degrees everywhere on earth. It is not only a permanent feature on the political agenda; for all practical purposes, it is the agenda... Sustainability is about the terms and conditions of human survival…"[4]

Along the Waterline: Cameraless Photography and the Nocturnal Register of Seaborne Activity[5] was a practice based photographic research project exploring my relationship with the nocturnal ocean while living aboard a sailing vessel in and around Te Whanganui-a-Tara/Wellington and Tōtaranui/Queen Charlotte Sounds. My relationship with sailing is even longer than my relationship with photography. My father introduced me to sailing as a young boy on the northwest coast of England and I since have sailed in many different parts of the world. Photography I picked up as a teenager and when I moved to New Zealand I studied for a Master's degree in Photography at the School of Art, Otago Polytechnic while teaching photography in Southland Institute of Technology. I moved to Wellington to do a PhD in cameraless photography and at the same time wanted to live on a boat. It took me a while to realise I could bring the two practices together. I had developed an interest in cameraless photography

1 Nathan Stegall, "Designing for Sustainability: A Philosophy for Ecologically Intentional Design." Design Issues Vol. 22, No. 2 (Spring, 2006), 56–63 (8 pages)

2 Orr. *Ecological Literacy Education and the Transition to a Postmodern World* (Albany: State University of New York Press, 1992), 86.

3 James Conca "Seafloor Mining for Critical Metals: A Brilliant Ida or Another Environmental Catastrophe." Forbes. February 11, 2022. https://www.forbes.com/sites/jamesconca/2022/02/11/seafloor-mining-for-rare-metals--a-brilliant-idea-or-another-environmental-catastrophe/?sh=58bc9ddc7719 "United States has not ratified the United Nations Convention on the Law of the Sea (UNCLOS), so we are not part of negotiations on regulations governing seabed mining."

4 Orr, Ecological Literacy 83.

5 Kevin Miles, *Along the Waterline: Cameraless Photography and the Nocturnal Regis ter of Seaborne Activity*. PhD Exegesis, Massey University, Wellington, NZ. (2022)

while teaching darkroom techniques and finding it appearing as a contemporary art form. The environment of the boat created possibilities for recording both light-sensitivity and chemical sensitivity towards the conditions of the sea in my images.

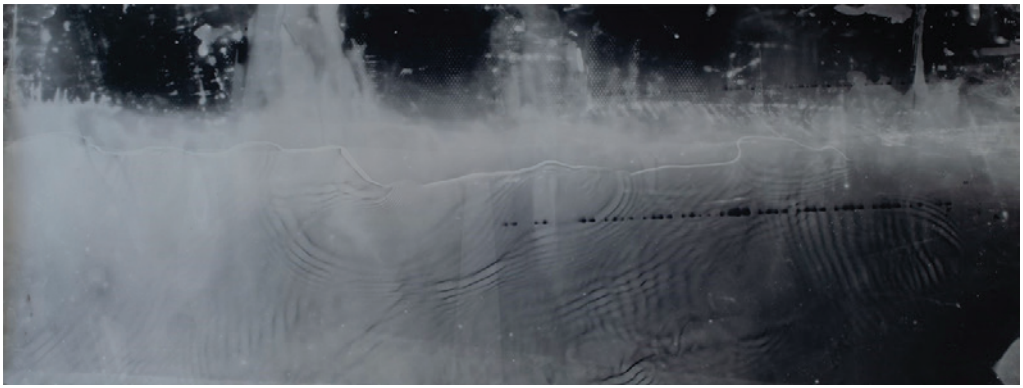

Figure 1. Te Whanganui-a-Tara (2021). Unique gelatin silver photogram. 46 x 106 cm. Source: Author

The 'cameraless' image shown in Figure 1 was produced at night at the waterline of the hull in various anchorages in the region. As the term suggests, cameraless images are produced entirely without a camera or lens and depend instead on analogue photosensitive materials (film or paper) coming into direct contact with, in my case, seaborne objects and seawater and exposure to ambient light. This fundamental yet tactile use of photochemistry is an odd thing to consider as a representation of the subjectivity that photography normally offers us. The familiar humanistic position through the use of optical perspective of lens and framing of the camera is abandoned by cameraless photography, which instead forces the viewer to confront another subjectivity registered through a tactile response to the chemistry and physics of the world. The strange shadow-like photographic trace, forces the viewer to step outside of their familiar understanding of the things depicted. This process of defamiliarisation has the potential to shift the viewer's humanistic tendency toward the primacy of vision, to the tactile surface of the object or the flux of materiality rendered as a haptic photographic image.

My interpretation of the United Nations Sustainability Development Goal: *Life Below Water* looks through a lens of spirituality, toward a philosophy of spirit. I support the belief and conviction that we must engage with the sea in ways less familiar to us, considering co-forming notions of phenomena and experience of the ocean as place of wonder and mystery. Through a practice of co-existence, involving contemplation of material, non-material, living and spiritual aspects of the sea as place, we can hopefully develop a truly sustainable relationship to the ocean, to everything in it and around it.

Along the Waterline draws on the strand of ecstatic-poetic phenomenology developed by Jennifer Gosetti-Ferencei. In her book *The Ecstatic Quotidian*[6] As Jennifer Gosetti-Ferencei demonstrates, modernist writers and artists from Walter Benjamin to Cy Twombly[7] examined modernity in its relation to quotidian life, which

6 Jennifer Gosetti-Ferencei, *The Ecstatic Quotidian: Phenomenological Sightings in Modern Art and Literature*. (University Park, Pennsylvania: The Pennsylvania State University Press, 2007).

7 In her book, *The Ecstatic Quotidian,* Gosetti-Ferencei gives the example of Benjamin's essays on "the nature of toys and their relation to the transformation of the everyday world" (p. 58) and I will add his references to the 'optical unconscious' in *The Work of Art in the Age of Mechanical Reproduction* (https://web.mit.edu/allanmc/www/benjamin.pdf) and *A Little History of Photography*. Cy Twombly's blackboard painting, *Untitled*, 1970, simulates trompe l'oeil, a technique that tricks the eye and its perception of objects. Typically, trompe l'oeil portrays ordinary objects of everyday use in the environment exposing our susceptibility to fallible perception.

was seen to harbour a latent ecstasis, or transformation, by 'stepping outside' familiar perception. My research explores the aesthetic-ecstatic potential of cameraless photography, not as a critique of 'the everyday' as a concern, but as a retro-modernist application of photography's potential to defamiliarise and thus illuminate.

As part of my studio practice as a PhD candidate, I wrote anecdotal accounts of passages and anchorages to inform the poetics of my photographic work through close analysis of my experience on the sea. These short texts focusing on the immediacy of experience appeared at various points in my exegesis to help maintain the reader's focus on a methodology of lived practice. An example of this anecdotal style of writing follows.

Coming to the Surface

It is Christmas Day morning 2020. We need to cast off from the marina at 2.00 am to catch the tide across the strait. We are meant to go with another boat, but they don't show, so we set off anyway. Out of the marina and away from the lights of the city and port, it suddenly becomes very dark. There is low cloud obscuring any light from the sky, but small navigation lights dance in the dark ahead. I am aware of their positions and significance, but it is so dark I am suddenly disoriented. I doubt my judgment, the chart plotter, my own eyes. You have to take it all in, remember what each light means and in the order in which you see them. Looking again, I see the pattern, get my bearings, and am back on course. We pass the channel markers, slowly edging towards the harbour mouth. Dark land mass looms either side of us. Senses become strained, but really, it is all about planning and following a course. So this is what we do. We pass the treacherous Te Tangihanga-o-Kupe/Barretts Reef as widely as we can afford to, heading into the middle of the channel as we approach Te Moana-o-Raukawa/Cook Strait. It is now around 3.30 am. As each minute passes, we become more vulnerable as we head toward what appears to be a black hole ahead, out into the notorious stretch of water. The two light houses of Te Raeakiaki/Pencarrow Head and the more distant Ōrua–Pouanui/Baring Head flicker into view on the east side of Te Whanganui-a-Tara, their beams stretch south and west into the darkness of the strait. For safety, we head out away from land rather than hugging the coastline. Time passes but the lighthouses still seem to be in the same position. We must be going against the tidal currents. Did I calculate correctly? My heart races as we slew across a particularly large swell. The darkness becomes palpable, pressing closer from all sides as if you could reach out and touch it. I feel breathless, as if the air had been sucked out of my lungs. It's like we have somehow sailed into a small dark pocket. Eyes straining, I grip the wheel and try to concentrate on the immediate surroundings, the engine's tone and the hiss of the swell as it passes by building from the south. The tidal current confirms my calculations and I am somewhat comforted by this. Our GPS chart plotter indicates we should alter course to the west in thirty minutes.

My partner is huddled down and staring forlornly out to sea. It is her first night sail and to be doing this with just the two of us suddenly seems like madness. I reassure myself that, as planned, it will not be long before the dawn breaks and all we need do is steer straight and sure. We get the flask out and drink some hot black coffee with biscuits. Feeling warmer now. Listening to the engine rise and fall. The VHF radio crackles briefly. It is 4.30 am and still pitch black. Finally, the beam of the lighthouses recedes as we roll with the tides, increasing speed now to five knots or more. Ahead in the distance, I see the navigation lights of one of the Cook Strait ferries coming towards us, on its way to Wellington port. The air feels warmer as we gybe slightly more downwind, heading northwards up Raukawa/Cook Strait towards the mouth of Tory Channel/Kura Te Au. The boat rolls a bit more on the swell. It keeps me busy at the helm. The ferry passes us half a mile away towards the coast, increasing our sense of isolation. However, we are safer here beyond the tidal rips and whirlpools. At least, that is our hope.

Almost imperceptibly, something is starting to change. The world emerges from the liquid night, like a latent image appearing on exposed photographic paper in darkroom development processes. I remember

> Teju Cole's analogy between Tomas Tranströmer's poetic imagery, and the emergent direct contact print made in the photochemical darkroom, the latent image, where "the sense is of the sudden arrival of what was already there, as when a whale comes up for air: massive, exhilarating and evanescent."[8] Slowly we make out waves further ahead and… yes all around. The space around us is expanding as the darkness recedes. It's easier to breathe now, like we have passed from a narrow tunnel, through a cave, and now into something more cavernous. I look up and the sky has become darkish grey, the first inkling of dawn. Immediately, our spirits are raised. We sigh with some relief. Later, as the sun emerges from the horizon bringing colour to the world, a pod of dolphins welcomes us, riding the bow wave, coming alongside so close we could almost touch them.
>
> We turn to the ocean itself: to its three-dimensional and turbulent materiality, and to encounters with that materiality, in order to explore how thinking *with* the sea, can assist in reconceptualising our geographical understandings…a *wet ontology* not merely to endorse the perspective of a world of flows, connections, liquidities, and becomings, but also… a means by which the sea's material and phenomenological distinctiveness can facilitate the reimagining and reenlivening [*sic*] of a world ever on the move.[9]

Philip Steinberg and Kimberley Peters engage with "the growing numbers of human geographers who are turning away from the plane geometry of points, lines, and areas that have long grounded the discipline,"[10] including Doreen Massey,[11] who challenges several of the more denigrating theories that have been written around oceanic space. The various flat-ontologies that "abolishes the notion of scale and replaces places with *sites*," and theories of volume which "have sought to reanimate space as both context and site of politics by emphasising its verticality, its materiality, and its temporality,"[12] are found to be lacking in an account of "the chaotic but *rhythmic* turbulence of the material world."[13] In Steinberg's and Peter's text, they thoroughly dismantle some of the *dismissals* of the ocean in political theory, particularly Carl Schmitt's *The Nomos of The Earth,*[14] in which he perceives the ocean from an immaterial, unknowable, and consequently 'insubstantial' perspective compared with the land. In his earlier work *Land and Sea,*[15] Schmitt is less dismissive, "identifying a substantive logic of the ocean, as well as the other three fundamental elements – earth, air and fire,"[16] in what is described by one commentator as a work of 'mytho-poesis'. In *Land and Sea*, Schmitt "draws on the works of Herman Melville, Jules Michelet, and others to identify the ocean as a contentious space of power conflict among humans as well as between humans and nature.

In addition to Schmitt, Steinberg and Peters draw our attention to other viewpoints that are also dismissive of the ocean as a meaningful space, citing both Claude Lévis Strauss (1973) and Roland Barthes (1972). For these thinkers, the ocean is "a space rendered ideologically and physically insignificant in reference to sociocultural and geopolitical concerns."[17] However, in their article, Steinberg and Peters dispute these ideas with those of Michael Serres and others, who repudiate such denigrations of oceanic space. Instead, they view the ocean as a complex

8 Teju Cole, *Known and Strange Things*, (New York: Random House, 2016), 37.
9 Philip Steinberg and Kimberley Peters, "Wet Ontologies, Fluid Spaces: Giving Depth to Volume through Oceanic Thinking," in *Environment and Planning D: Society and Space* 33 (2015): 248
10 Steinberg and Peters, "Wet Ontologies, Fluid Spaces": 248.
11 Doreen Massey, For Space (Thousand Oaks, CA: Sage, 2004).
12 Steinberg and Peters, 248.
13 Steinberg and Peters, 248.
14 Carl Schmitt, *The Nomos of the Earth in the International Law of the Jus Publicum Europaeum.* (New York: Telos, 2003).
15 Carl Schmitt, Land and Sea (San Diego, CA: Counter Currents, 2014).
16 Steinberg and Peters, 249.
17 Steinberg and Peters, 249.

phenomenon and a vital arena for our understanding of place. For myself, this is also an opportunity for the contemplation of the spiritual aspects of experience that life below water may present.

Further contention of the quotidian ocean is explicated through Jonathon Raban's analysis of wave formation in *A Passage to Juneau: A Sea and its Meanings*,[18] in which he describes the shaping of waves and the ocean's movement from his observations aboard a boat while on a voyage between Seattle and Juneau. This account of the author's solo journey, aboard a ten-metre sailing yacht, brings us a concept of the ocean from a maritime perspective, which recognises and alludes to the sea as a three-dimensional, atmospheric form. While acknowledging the ontology of land-based, or 'dry,' concepts of space, a 'wet ontology' such as Steinberg's and Peter's forces us to recognise that the sea "presents us with a space that is emergent through a particular co-composition of matter and forces. In turn, this hydro-elemental assemblage allows us to rethink motion and matter and how it shapes the world as we know it."[19] Steinberg and Peters continue to address this through a maritime lens in the human geographical practice and relational research of Jon Anderson, and his interest in the activities of kayaking and surfing. Anderson discusses these activities in terms of convergences with the ocean and describes how the 'surfed wave' can be understood as a relational place. Generally, this is expressed through an intimate and intense connection to the sea and swell, or more specifically, "those who actually *engage* the ocean, like sailors and, perhaps more profoundly, surfers and swimmers, become one with the waves as the waves become one with them, in a blend of complementarity and opposition."[20]

Steinberg's, Peters' and Anderson's provocative appeal to wet ontologies requires us to "go beyond considering matter as static substance and leads us to consider the various ways in which matter changes physical state as it moves through, and simultaneously constructs, both space and time."[21] These ideas are in stark contrast to territorial concepts of space and solid land. These provocations are developed around Paul Virilio's writings on the materiality of water and the "hydrosphere,"[22] and contrasted with other thinkers who critique terrestrial or state ontologies with those of the volume of the sea. Virilio argues further that understanding the Anthropocene world as an 'assemblage' is an effective way of describing the "churnings of the ocean, that both enables and disrupts (or reterritorialises and deterritorialises) earthly striations,"[23] including those of matter and time.

Steinberg and Peters present their argument for "an alternative perspective in which time, as expressed through *assembled* matter, is nonlinear and fluctuating, and matter is mutable and leaky – part of a process of ongoing reformation."[24] These ideas are articulated in my research in the mutable leakiness of cameraless photography's processes and materialities. The chemical, temporal and physical materiality of the ocean, integral to my images, "can never be separated from either the experience of the ocean or the meanings that we attach to oceanic experiences."[25] The authors also differentiate between geological land-time as referenced by Massey[26] (which is generally speaking, not experienced) and the lived-time encounter with ocean mobility. Their example suggests that one can hike on a mountain trail without realising that one is traversing a landform whose existence is the result of tectonic subduction. It is much more difficult to step into the surf without encountering and reflecting on both water's mobility and its depth.[27]

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18 Jonathon Raban, A Passage to Juneau: A Sea and its Meanings (London: Picador, 1999).
19 Steinberg and Peters, 250.
20 Steinberg and Peters, 245.
21 Steinberg and Peters, 252.
22 Paul Virilio, *Bunker Archeology* (Princeton: Princeton University Press. 1994), 10.
23 Steinberg and Peters, 255.
24 Steinberg and Peters, 256.
25 Steinberg and Peters, 256.
26 Massey, *For Space*.
27 Steinberg and Peters, 258.

The same concepts of lived temporal experience, in, on and around the ocean relate to the key concepts of my methodology in this research. A crossover between these practices and my own can be made in reference to the previously mentioned surfing and kayaking experiential work of Anderson. His description of engagement with the sea on a kayak presents a maritime experience of the sea that is perceptually different to land-based experiences of place and time. My research also makes use of these ideas as a methodological framework for interrogating cameraless photography's potential to document the kind of engagement with the sea that Anderson refers to.

Drawing on this issue, and the concepts of cameraless photography as a witnessing material to record intersubjective experience of place, informs my study's key methodological concerns. This approach employs cameraless photography's aesthetic qualities as uniquely able to interpret and respond to the poetics of seaborne phenomena. Working with tactile-oriented aspects of photochemistry and raw materials of photography, my study acknowledges the various agencies co-forming and co-existent in place and experience of place. Widely intersubjective, post-phenomenological readings require reference to the tactile senses and the 'onflow' of tangible activity in place, between objects, beings and processes, in time and space.

A tactile exchange is particularly true of the sea, as a place of constant flux, volatility, and more than liquid materiality; things which are often 'felt' more than they are seen, especially when on the sea at night. The seaborne or maritime place is conceptually fogged by land-oriented dismissals and quotidian accounts of it as both featureless, and yet mysterious. Other accounts invite us to step outside such everyday interpretations to consider a wider materialist understanding of the sea and the seaborne as place. Consequently, my work implements the cameraless aesthetic and its decentering, ecstatic processes, as instrumental to a post-phenomenological interpretation of place.

As we strive to develop our philosophy of spirit towards a more sustainable and meaningful relationship with our oceanic planet, we have to consider the possibility that humans have taken oceanic things for granted. Looking at life below the water with a sense of wonder and possibility takes a step towards understanding how we might find lasting harmony, as guardians of a natural world dependent upon the conservation of the oceans.

COMMENT

Adapted from the author's exegesis *Along the Waterline: Cameraless Photography and the Nocturnal Register of Seaborne Activity.* PhD Exegesis, Massey University, Wellington, NZ. (2022)

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REFERENCES

Cole, T. (2016). *Known and strange things*. New York: Random House.

Conca, J. (2022). Seafloor mining for critical metals: A brilliant idea or another environmental catastrophe. *Forbes*. February 11. https://www.forbes.com/sites/jamesconca/2022/02/11/seafloor-mining-for-rare-metals--a-brilliant-idea-or-another-environmental-catastrophe/?sh=58bc9ddc7719

Gosetti-Ferencei, J. (2007). *The ecstatic quotidian: Phenomenological sightings in modern art and literature.* University Park, Pennsylvania: The Pennsylvania State University Press.

Massey, D. (1994). *Space and gender.* Minneapolis: University of Minnesota.

Orr, D. (1992). *Ecological literacy education and the transition to a postmodern world.* Albany State. University of New York Press.

Raban, J. (1999). *Passage to Juneau: A sea and its meanings.* London: Picador.

Schmitt, C. (2003). *The nomos of the earth in the international law of the Jus Publicum Europaeum.* New York: Telos.

Stegall, N. (2006). Designing for sustainability: A philosophy for ecologically intentional design. *Design Issues, 22*,(2), 56–63.

Steinberg, P. & Kimberley, P. (2015). Wet ontologies, fluid spaces: Giving depth to volume through oceanic thinking. *Environment and Planning D: Society and Space, 33*: 247–64.

Virilio, P. (1994). *Bunker archeology.* Princeton: Princeton University Press.

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GROWING RURAL HEALTH / TIPU HAERE TUAWHENUA HAUORA: 30 YEARS OF ADVOCACY AND SUPPORT IN AOTEAROA

Josie Crawley

You might think that a history of the New Zealand Rural General Practice network would be a somewhat dry manuscript. You would be wrong; this is a passionate rollercoaster. Co-authored by rural health promoters Jean Ross, Tania Kemp, Martin London and Shelley Jones, the writing is complimented by multiple voices sharing historic ephemera, memories, challenges, triumphs, and visions for the future. Developed during the complexities and enforced isolations of COVID, the contents page helps to navigate within its pages. My copy came with a bookmark that helpfully explained the abbreviations used.

Growing Rural Health Tipu Haere Tuawhenua Hauora: 30 years of advocacy and support in Aotearoa is an inviting chat of a book, charting the journey of dedicated but disparate rural health organisations and providers, coming together like a braided river in their ongoing struggle to provide sustainable rural health care across the remote islands, corners and highways of Aotearoa/New Zealand. The newly formed collective network Tuawhenua Haurora unites the voices of rural general practitioners', allied health, rural hospitals, students' and nurses' partnering with Te Rōpū Ārahi to provide advocacy and support into the future, aiming to achieve rural health equity for all rural communities. The Mihi, Forewords and Preface/Whakatauki all attest to a shared determination to bridge inequities with rural and indigenous peoples.

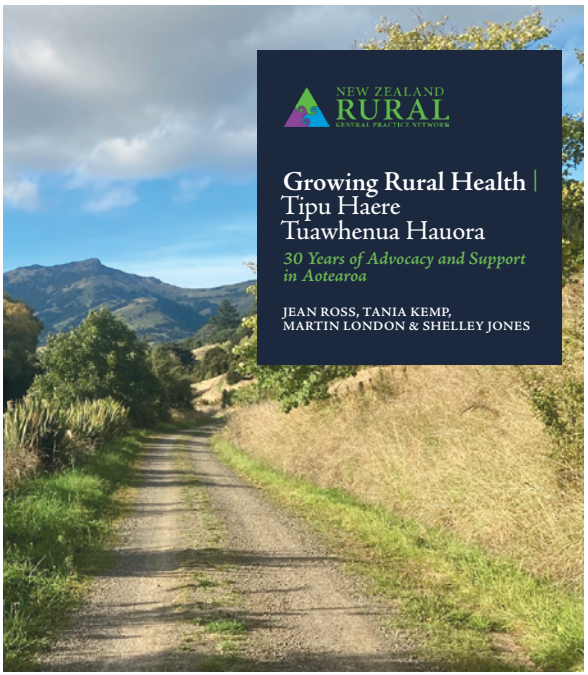
Rural communities and locations shine within the pages, assisted by Martin London's evocative photographs and other illustrations. Providing a lens that illustrates the special nature of rural: intriguing, challenging, unique, obstacles of distance, isolation and inequitable health and education opportunities. Through telling the history of the network, strategies that support rural health practitioners are uncovered.

The idiosyncratic funding and political decisions of government over the last three decades are translated into on the ground healthcare, the rural lens they are seen through make it very clear that one size does not fit all in Aotearoa/New Zealand. The realities of rural practice are not recognised outside of the practitioners', the network was formed so a rural voice could be heard, rural realities could be recognised, actively advocating for support for both the population, and health professionals serving them. I would have valued a timeline as a graphic addition, illustrating collective themes of ingenuity, collaboration and a deep passion to sustain and improve the provision of health services.

As a nurse educator, I have the pleasure of working with Rural Nurses stories. *Growing rural health* provides a background framework to the struggles and challenges rural nurses include within their everyday experience. Chapter four illustrates the on-going growing pains of the autonomous rural nurse role; to be recognised as their own speciality, to have support and education, to progress their scope of practice, to be funded to best meet the needs of their communities.

This book will be a resource for anyone who engaged with rural health, who wants to understand what makes rural health practitioners and their families tick. It provides a foundational blueprint for future action. At its heart it describes how a community can be grown and developed - how shared concerns and frustrations can result in connected fellowship, educational innovations and sometimes desperate action in the face of decades of constantly changing political background.

The New Zealand health and disability system is again in flux, having recognised the need to both listen to communities and respond in a way that reduces health inequities. The new health Act, Pae Ora offers both challenges and opportunities to the provision of rural health. The timely publication of this book suggests by highlighting the past, while resolutely facing the future the collective voice of Tuawhenua Ora will advocate passionately for the health of rural communities and the health practitioners within them into the decades to come.



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