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Identifying Threshold Concepts in General Practice

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Definitions

Pepeha **'…**is a way of introducing oneself. Using a set structure, it identifies who we are, where we're from and where we belong. Pepeha is used in a Māori context and has a formal basis, but the idea is universal.'[1]

Threshold Concept **'…**can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. As a consequence of comprehending a threshold concept there may thus be a transformed internal view of subject matter, subject landscape, or even world view. This transformation may be sudden, or it may be protracted over a considerable period, with the transition to understanding proving troublesome. Such a transformed view or landscape may represent how people 'think' in a particular discipline, or how they perceive, apprehend, or experience particular phenomena within that discipline (or more generally).'[2]

Whakawhanaungatanga **'…**is the process of making connections and relating to the people by identifying family kinship and other linkages including relationships to people who are no kin but who, through shared experiences, feel and act as kin.'[3]

Acronyms and Initialisms

GPEP	General Practice Education Programme
GP(s)	General Practitioner(s)
ICE	Ideas, Concerns, Expectations
ME(s)	Medical Educator(s)
NZ	New Zealand
RNZCGP	Royal New Zealand College of General Practitioners
TC(s)	Threshold Concept(s)
VT(s)	Vocational Threshold(s)
WHO	World Health Organisation

Executive Summary

Background and Aim

Threshold concepts (TCs) are crucial and transformational learning experiences of a student which have been increasingly recognised in various disciplines including medicine. Identification of these TCs however remains limited in the field of general practice. The aims of this study were to identify these significant ‘Aha!’ moments in New Zealand (NZ) General Practitioners (GPs) in order to contribute to enhanced general practice teaching and learning.

Methodology

This qualitative study was performed from January to October 2021, and comprised a literature review on TCs, followed by participant recruitment, data collection via focus groups, and ending with thematic analysis and this report write-up and submission. Fifty participants were involved.

Key Findings

1. Most of the participants were of European ethnicity and from the three main centres: Auckland, Canterbury, Wellington.
2. Te Whare Tapa Whā was the overarching meta-meta-theme underpinning all themes and TCs.
3. A total of 11 themes (some with sub-themes) were identified: Administrative Aspects, Consultation Tools, Intra– and Interprofessional Aspects, Personal experiences, Professional Biases, Uncertainty, Patient Needs, Patient Adherence, Patient Context, Consult-as-Therapy and Relationship.
4. A total of 20 TCs were identified and presented as heuristical statements in the forms of medical proverbs/whakataukī. These include:
    - Money makes the practice go round.
    - Be a legal eagle.
    - Manage time or it will manage you.
    - Guidelines, GPs’ little helpers.

- Right tool, right word, right place.
- The whole of the practice is greater than the sum of the parts.
- The personal enhances the professional.
- Beat biases by reflection.
- Chew the CUD – Complexity, Unpredictability, Diversity.
- Embrace the uncertainty.
- Not knowing is knowing.
- Seek and you shall find.
- Waiting and seeing, waiting and being.
- Look, listen, think between the lines.
- Treat the patient beyond the disease.
- No patient is an island.
- Words work wonders.
- Hearing is healing.
- Being you and being there.
- The relationship is worth a thousand consults.

Key Recommendations

A. General Practice Educational Programme (GPEP) Teaching

1. Integrate the findings into the curriculum by actively teaching about the theory of TCs and these identified TCs in the first year of GPEP, possibly in large group teaching.
2. Create frequent opportunities to explore these further, in terms of Registrars' own clinical experience, as they progress through the second and third year, in small group sessions mediated by Medical Educators (MEs).
3. Enhance opportunities for teaching and learning about self-reflective skills which would aid traversing several key TCs (especially managing professional biases and uncertainty).

B. Future Research

In addition to considering these findings and potentially integrating them into the GPEP training, we would also encourage the Royal New Zealand College of General Practitioners (RNZCGP) to consider further funding research into several areas:

1. with those well versed in Te Ao Māori and Te Reo to expand upon further defining these TCs in a bilingual and inclusive manner;

2. identifying TCs specifically relating to rural general practice;

3. researching what TCs patients may experience in seeking general practice care and how these may facilitate (or not) the delivery of care and care outcomes;

4. how personal (non-medical) experiences of GPs can influence the subsequent experience of professional TCs; and,

5. exploring whether greater teaching emphasis on self-reflection may improve gaining insight into personal biases and increasing tolerance of uncertainty.

1 Introduction

1.1 Background

The theory of TCs was developed in by Meyer and Land in 2003[2] to describe crucial shifts in students' learning, and sometimes, even their worldview. It goes far beyond the simple learning of a fact. Often TCs are also accompanied by an affective sense of 'movement', of intellectual growth and personal insight, and a newly discovered sense of relief and/or accomplishment of having travelled past a previous blockage, into a new state which profoundly changes a student's understanding of a topic.[2]

Since Meyer and Land's original work, eight characteristics of a TC have been identified; *transformative, troublesome, irreversible, integrative, bounded, discursive, reconstitutive,* and *liminal* (see Table 1). These are not necessarily all required for a piece of learning to be deemed a TC, but the *transformative* characteristic – perspective-altering component – is non-negotiable and considered the necessary mandatory feature of a TC.[4] Transformation involves moving from one state of being into another state of being for a student. The student, and the way they see the subject – and perhaps even their view on life and world – is radically altered.

Characteristics	Definition
Transformative	Understanding the TC creates a shift in perspective
Troublesome	Understanding the TC presents difficulty or tension
Irreversible	Once learnt the TC is unable to be forgotten
Integrative	Understanding the TC exposes the previously hidden interrelatedness of something
Discursive	Learning the TC creates an expanded set of vocabulary
Bounded	Learning the TC delineates a specific aspect or topic
Reconstitutive	Understanding the TC causes prior learning to be reconstructed in a different way
Liminal	Understanding the TC requires traversing a transition period of uncertainty

Table 1: Definition of Threshold Concepts' Characteristics (derived from Meyer and Land, 2003, 2006)

TCs are frequently *troublesome*; the student experiences a subjective or emotional sensation of tension, anxiety or even distress which rapidly resolves once the TC is successfully acquired. Once learnt, TCs are often *irreversible*; not only are they unlikely to be forgotten, they are impossible to forget as they provide a fundamental structure for future learning within that domain. Hence constantly reinforcing and being reinforced by the study of it. TCs also can have an *integrative* aspect; successfully acquiring a TC can lead to an affective sense of many pieces falling into place to make a new coherent whole, like pieces of a jigsaw puzzle. Learning a TC can be *discursive,* enlarging one's vocabulary with new words and/or meanings which may then be used in other domains of study. TCs can also be *bounded*, helping to delineate the edges or boundaries of a domain of study, and distinguishing one domain from another. TCs can also be *reconstitutive*; other elements of learning acquired previously to the TC can be altered by understanding the TC (to use the metaphor of the jigsaw again, those pieces previously acquired but not fitting together, can metamorphose into different shapes which do fit together under the influence of the TC). Finally, TCs may also be *liminal*. *Liminal* spaces are uncomfortable, uncertain spaces at the edge of the known world. These spaces may be small with understanding occurring within minutes, or large with the realisation occurring over days or years of oscillating back and forwards between old and new learning. TCs help to traverse these spaces, acting rather like the mythological role of a psychopomp (spiritual guide to the soul).[2,5]

By their nature, TCs provide a means of grasping the essential, underlying dimensions of a discipline that one must grasp in order to move towards authentic mastery of it. TCs have been increasingly recognised as an important part of teaching and learning in tertiary education. Many TCs have been identified in various disciplines such as nursing,[6,7,8,9] engineering,[10] dentistry,[11,12] occupational therapy,[13,14,15,16] pharmacy,[17] and physiotherapy.[18]

Research into TCs have also been carried out in medicine. The following TCs are shared by multiple healthcare professions: 'caring',[19] 'role of touch',[20] 'intra- and inter-professionality',[21,22] 'holistic approach', 'uncertainty', 'complexity of care', 'consider the whole person', 'collective competence', and 'patient-centeredness'.[23] More specifically, TCs identified in undergraduate medical teaching include; the 'understanding of pain',[24] 'the nature of evidence', 'homeostasis', 'empathy', 'embodied shared care',[25] 'identity formation', 'becoming an agentic learner', 'comfort with uncertainty',[26] and

several concepts reflecting personal and professional identity formation in the transition from layperson to physician.[27] In a preliminary, undergraduate, pathology teaching study, TCs were identified in topics relating to: tissue injury, biopsy, neoplastic pathology, and clinical autopsy.[28] In anaesthesiology: 'cognitive load', 'illness script', and 'ventilation-perfusion mismatch' have been identified as TCs.[29] TCs in cardiothoracic surgery include: 'responsibility', relationships with the team', 'managing technical challenges', managing the unseen or unexpected', and 'coping with adverse events' among several others.[30] In geriatrics 'capacity assessment',[31] 'complexity of medical care' and 'nurturing-care'[32] have been found. TCs have also been found in neurology, such as understanding 'electroencephalography';[33] in palliative care,)'emotional engagement', 'communication management', 'embodied shared care', 'active inaction', 'uncertainty embraced')[34] and in psychiatry including 'therapeutic risk-taking', 'biopsychosocial model', 'the concept of diagnosis'.[35]

Research into TCs in general practice medicine worldwide is very limited. An EMBASE (Ovid) literature search revealed just 164 results of which only two overseas papers were specific to general practice and primary care. Of these two studies, Neve (2019)[23] was an introductory paper exploring the potential for identifying TCs in post-graduate primary care and the recent Gupta (2021)[26] paper describes TCs identified in undergraduate primary care teaching (see above). Although some studies describing specific, important or difficult aspects of primary care such as the role of 'touch' and 'uncertainty' exist, these were not overtly linked to TCs by the authors.[36,37]

One study which has explored vocational thresholds (VTs) (a similar construct to TCs) specifically in postgraduate general practice training.[38] This Aotearoa/NZ study by Vaughan, Bonne and Eyre (2015)[38] is currently the only study worldwide which has attempted to identify TCs in postgraduate general practice. Potential TCs identified in this study included: 'being the good doctor' (highlighting the importance of trust in the doctor-patient relationship), 'healthcare without a prescription' (describing the value in simply listening to patients), 'an ethic of care through relationship' (portraying importance of relationships in the provision of continuity of care over time), 'negotiating the boundaries of care' (involving the patient in their treatment plans with a patient-centred approach), and finally the 'uncertainty and anxiety' which illustrated the fear of missed diagnoses that many GPs face on a regular basis.[38]

Furthermore, we were also interested in exploring general practice TCs in the context of a Hauora Māori model of health, Te Whare Tapa Whā. Te Whare Tapa Whā is the founding model of healthcare in NZ developed by Sir Mason Durie,[39] and is also an important component of the curriculum for General Practice.40 It not only captures the intent of the Treaty of Waitangi, NZ's founding document, but its principles are also well aligned with holistic approaches to health including the biopsychosocial (BSP) model,[41] and the World Health Organisation's (WHO) definition of health as being in positive state of wellbeing and more than simply the absence of disease.

The four domains of Te Whare Tapa Whā are connected to the environment or land (whenua) and include: physical health (taha tinana), mental and emotional health (taha hinengaro), social and family health (taha whānau), and spiritual health (taha wairua).[42] WHO states; 'health is a state of complete physical, mental and social well-being'[43] and also acknowledges 'the unique spiritual and cultural relationship between indigenous peoples and the physical environment and believes that this relationship provides valuable lessons for the rest of the world'.[44] Hence Te Whare Tapa Whā is an essential construct for understanding Māori health which can also be extended to the diverse population of NZ encountered in general practice.[45]

Therefore, one of our interests in Te Whare Tapa Whā with respect to TCs, was to explore if a relationship between Te Whare Tapa Whā and TCs existed, and if so what the nature of this relationship may be. This is in keeping with the nature of TCs whereby it has also been described as existing in the full range of domains which make up the student learning experience including: cognitive, affective, psychomotor, social, ethical,[46] and combability with one's conscience.[47] Taking context into account is an essential element in the identification of TCs.[4]

Historically TCs had been drawn from experts within the discipline but recent research also suggest that students may be better at identifying TCs than teachers, who may be less able to recall those TCs they encountered long ago.[34,48] Therefore, there may be value in research into TCs concentrating upon participant groups who have recently entered or completed studying the research domain under question.

1.2 Aim

The primary aim of this study was to identify TCs in the current, formal, specialist postgraduate general practice training in NZ i.e. GPEP, run by the RNZCGP. The secondary aims were to understand how threshold concepts may relate to Te Whare Tapa Whā and delineate the possible role TCs may have in the teaching and learning of specialist postgraduate general practice training. Our underlying assumption, drawn from the previous research, as above, was that identifying these TCs would assist in helping focus the teaching and learning on the most challenging and fundamental aspects in becoming a GP. In addition, once TCs are clearly identified, the TCs themselves could be actively incorporated into the GPEP for Registrars, reinforced by MEs once they, themselves, have learnt about these TCs.

1.3 Specific Objectives

- To identify the existence and nature of TCs as experienced by current and recent general practice trainees and MEs of the GPEP and recent graduate Fellows of the RNZCGP.
- To explore the relationship of these concepts to the Hauora Māori model Te Whare Tapa Whā.
- To suggest whether and how TCs may be incorporated into the GPEP programme, either directly (i.e. the concept of TCs is taught as well as the examples thereof) or indirectly by refining the syllabus to take them into account but not explicitly teach them as such.

2 Methodology

2.1 Research Question

What TCs exist in general practice in NZ and how do these relate to the Te Whare Tapa Whā model of health, and the current teaching and learning of specialist, postgraduate general practice medicine?

2.2 Research Design

A qualitative study was used to answer the research question with details of the method below. This methodology was chosen as inductive approaches, employing 'detailed readings of raw data to derive concepts, themes or a model… from the frequent, dominant or significant themes inherent in raw data,'[49] are ideal for establishing research where there is little, prior information.

2.3 Ethics Approval

Ethics approval for this study was obtained from the University of Otago's Human Ethics Committee (Approval Number D20/445), and approval was also obtained from the RNZCGP to approach Registrars, Fellows and MEs for recruitment purposes.

2.4 Inclusion/Exclusion Criteria

Participants were eligible to be considered for inclusion if:

- They had taken part in the pilot focus group (for further details see below)
- They were a current GPEP Registrar enrolled with the RNZCGP; or
- They were a Fellow of the RNZCGP and had graduated with their Fellowship within the past five years; or
- They were a current ME with the RNZCGP.

Participants were ineligible to be considered for inclusion if they were not a member of any of these groups above.

2.5 Participant recruitment

Recruitment advertisements were distributed to potential participants in several ways including advertising in the ePulse RNZCGP weekly email newsletter (twice), individual emails sent to all Registrars and Fellows on the College database, emails sent to College MEs to encourage Registrar participation (twice), and advertising in the 'GPs for GPs' Facebook page (twice).[50,51]

Advertisements included links to both the SurveyMonkey page for registration for participation (see 6.1 Appendix A), and the Information Sheet (see 6.2 Appendix B). Once completed registrations were received, the same Information Sheet was sent (to ensure reading) with a Consent Form (see 6.3 Appendix C) via HelloSign. Following completion of the informed consent process, an email was sent giving participants options for their preferred focus group session time, and a subsequent email was sent out with the Zoom link for their preferred session closer to the date with a reminder text also being sent.

2.6 Focus groups

Participants were allocated into their preferred focus group. Focus group sessions utilised an original power-point presentation (see 6.4 Appendix D) on TCs together with a summary slide of questions (see 6.5 Appendix E) to help participants recognise their experience of TCs in general practice and to facilitate discussion. This power point presentation was piloted at a Zoom meeting of the Qualitative Research Group meeting at the Department of General Practice and Rural Health, University of Otago on 25 February 2021 for feedback and refinement. The presentation was also piloted at a Zoom meeting with Dr Julie Timmermans, Higher Education Development Centre, University of Otago, whose own PhD was on TCs, as well as Dr Anne Callaghan, Department of Psychological Medicine Faculty of Medical and Health Sciences, University of Auckland, who has recently published a study on TCs in palliative care. Based on feedback from these consultations, subsequent modifications were made, and the presentation was then used with a pilot study focus group.

This group comprised of seven GPs from a single practice, recruited by word of mouth, that was keen to be involved *en masse*. This pilot group consisted of a range of participants including a GPEP Registrar, but also several GPs who were outside of the original recruitment criteria. Some were

more than five years post-graduate Fellows and one was a non-training GP. As no modifications were made to the presentations following feedback from this group, their results are included in this study as these did not significantly differ from those who more strictly fulfilled the inclusion criteria.

The focus groups were structured with initial introductions of the moderator and participants (five minutes), the power-point presentation on TCs (see 6.4 Appendix D) (25 minutes), followed by brainstorming time while referring to the summary slide of questions (see 6.5 Appendix E) (five minutes), and finally giving time for participants to present and discuss their thoughts within the group (30 minutes). During these group discussions, participants were asked to present any transformative (single mandatory characteristic of a TC) or 'Aha!' moments (as facilitated by the summary slide of questions) in their learning experience which may potentially underlie, signify and/or identify the presence of a TC. These focus groups were carried out by one of the researchers (AC) between March and June 2021.

2.7 Data Collection and Analysis

Data was collected via audiotaping and transcribing participants' responses during the focus groups. Results were then analysed using standardised thematic analysis resulting in the construction of themes.[52] Further analysis lead to the division of some themes into sub-themes, as well as the creation of meta-themes which encompass two or more themes (with their associated sub-themes).

NVivo software was used to facilitate the coding of results and to map out the TC meta-themes, themes and subthemes. Triangulation occurred via both researchers coding initially separately, then comparing results and resolving differences by discussion and analysis. This was an integrative process resulting in multiple, repeated analyses of the data. Coding rules, with inclusion and exclusion criteria, were defined to ensure the consistency in the classification of the respective data.

Triangulation of the results with the participants (member checking) was achieved by seeking their opinion subsequently to the coding being constructed, by checking with participants that they considered the coding congruent with their intent, and with the participants also providing clarification where necessary.

3 Results

3.1 Demographics

A total of fifty participants were recruited and ten focus group sessions were held with each group having between two to eight participants. 62% of participants were aged in their twenties or thirties, 32% in their forties or fifties, and 6% in their sixties, with resulting median age of 36 years and mode age of 30 and 32 (see Figure 1).

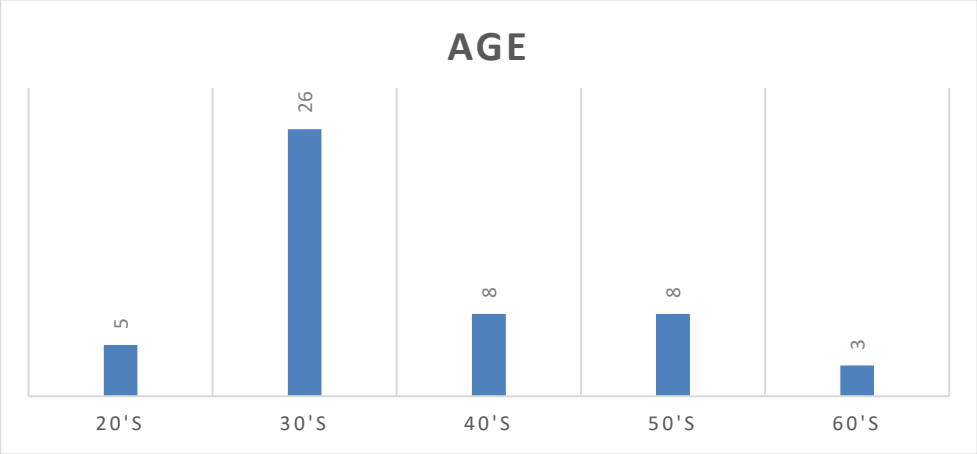

Figure 1: Age range of participants

58% of participants were Pākehā/European, 2% Māori, 34% Asian, 4% Middle Eastern, and 2% African (see Figure 2).

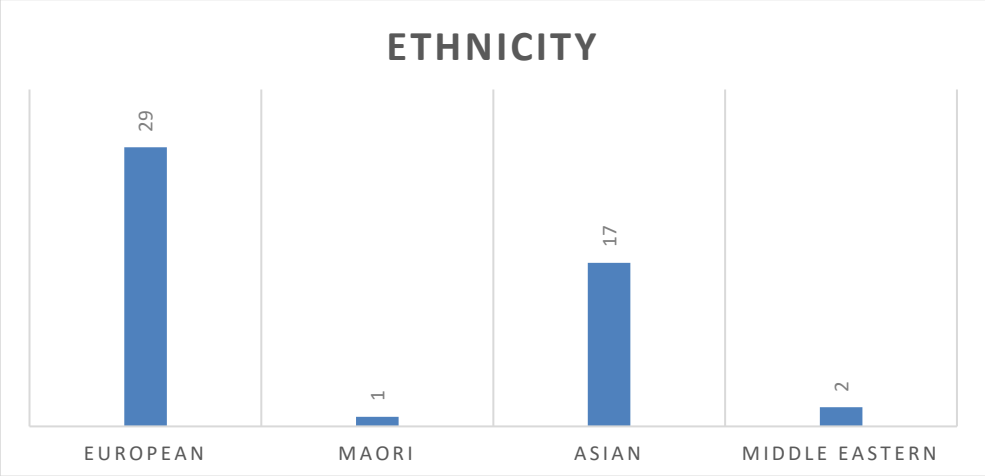

Figure 2: Ethnicity of participants

The largest proportion of participants came from Auckland (52%), followed by Canterbury (14%), Wellington (12%), Waikato and Otago (6% each), and Northland, Bay of Plenty, Manawatū-Wanganui, Taranaki, and Marlborough (2% each) (see Figure 3).

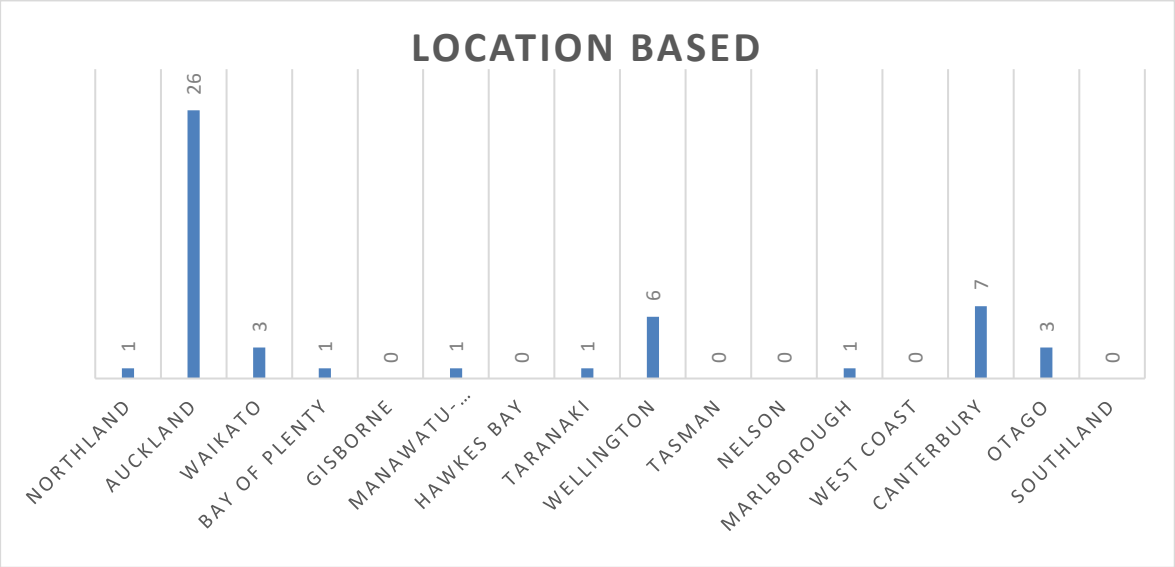

Figure 3: Location where participants were based

The level of training of participants ranged from: 6% GPEP Year One Registrars, 34% GPEP Year Two Registrars, 22% GPEP Year Three Registrars, 10% year one to five RNZCGP Fellows, 6% RNZCGP Fellows greater than five years post-graduation (who did not meet the original inclusion criteria but participated as part of the pilot focus group). 20% MEs, and 2% 'other GP' who was a non-training GP who also participated in the pilot study (see Figure 4).

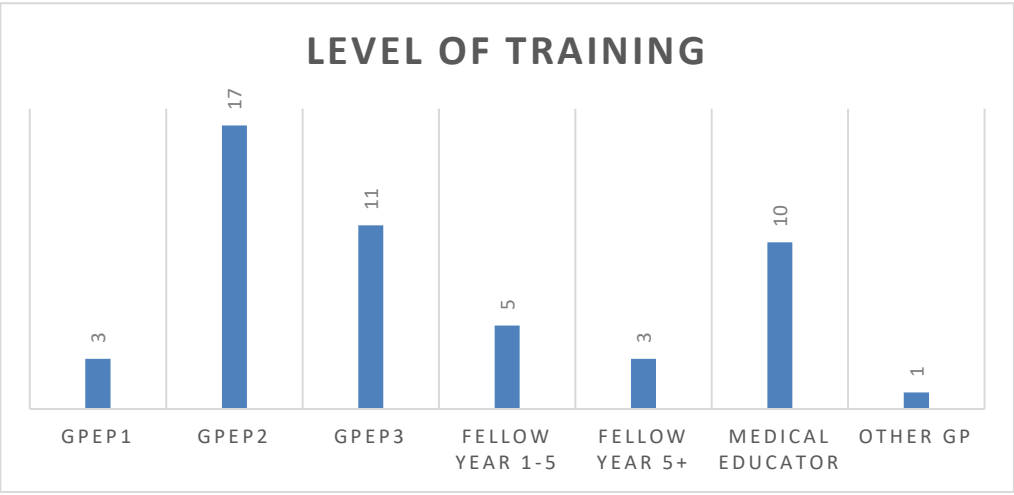

Figure 4: Level of training of participants ('Other GP' is one non-training GP)

3.2 Meta-themes, Themes and Sub-Themes (codes) Identified

Quotations regarding participants' transformative 'Aha!' moments from their learning experience were collected, analysed and coded into meta-themes, themes and subthemes. On analysis it was found to be impossible to separate out the four components of Te Whare Tapa Whā – taha tinana (physical health), taha wairua (spiritual health), taha whanau (family health), taha hinengaro (mental health) – from the responses given by participants. Their answers so commonly incorporated and merged all four aspects that is was decided that any attempt to separate these 'four walls' of Te Whare would be artificial, false and not staying true to the intent of the participants. Consequently, we chose to regard Te Whare Tapa Whā as a 'meta-meta-theme' which was inclusive, and underpinned, everything else which followed. Three meta-themes were identified within the 'house' of Te Whare Tapa Whā: the Doctor's Role, the Patient's Role, and the Doctor-Patient Interaction.

Within the Doctor's Role meta-theme, the themes identified were: Administrative Aspects, Consultation Tools, Intra-professional Aspects, Personal Experiences, Professional Biases, and Uncertainty. The Patient's Role meta-theme included themes termed: Patient Needs, Patient Adherence and Patient Context. The Doctor-Patient Interaction meta-theme was divided into two themes: Consult-as-Therapy and Relationship. Some of these themes were then further broken down into sub-themes as appropriate (see Table 2).

Meta-meta-theme	Meta-theme	Theme	Sub-theme	Definition
Te Whare Tapa Whā	**Doctor's Role**	**Administrative Aspects**		**Quotations relating to administrative components involved in the running of general practice.**
			Financial	Quotations relating to financial, economic, funding and resource aspects (including limitations) of general practice.
			Legal	Quotations relating to legal aspects of general practice.
			Time Management	Quotations relating to the management of general practice duties within its time constraints.
		Consultation Tools		**Quotations relating to tools, resources and strategies used during consultations regarding history taking, examination and management.**
			Management Guidelines	Quotations relating to evidence-based protocols and guidance used in the management of general practice cases.

			Communication Techniques	Quotations relating to formally taught skills and strategies used to improve communication including verbal and non-verbal techniques.
		Intra- and Interprofessional Aspects		**Quotations relating to interactions between GPs, other practice staff, specialists and the multidisciplinary team.**
		Personal Experiences		**Quotations relating to personal life experiences, subsequently found useful in professional general practice.**
		Professional Biases		**Quotations relating to biases into ways of dealing with professional issues.**
		Uncertainty		**Quotations relating to aspects of general practice which cause uncertainty.**
			Sources of Uncertainty	Quotations relating to the origins and causes of uncertainty in general practice.
			Reactions to Uncertainty	Quotations relating to the cognitive and emotional reactions dealing with uncertainties arising in general practice.
			Management of Uncertainty	Quotations relating to managing uncertain or unknown cases in general practice.
	Patient's Role	**Patient Needs**		**Quotations relating to patient expectations and preferences including those which are often hidden or misunderstood. (Excludes specific references to Ideas, Concerns, Expectations (ICE), see Communication Techniques.)**
		Patient Adherence		**Quotations relating to aspects that impact upon patient understanding and adherence to management.**
		Patient Context		**Quotations relating to factors that make up the whole patient and their holistic wellbeing.**
	Doctor-Patient Interaction	**Consult-as-Therapy**		**Quotations relating to the therapeutic benefit obtained from the consultative process.**
			Explanation	Quotations relating to the therapeutic benefit the patient receives from the consultation via explanations given by the GP.
			Listening	Quotations relating to the therapeutic benefit the patient receives from the consultation via the act of listening by the GP.
			Presence	Quotations relating to the therapeutic benefit the patient receives from the consultation via the presence of a trusted GP.
		Relationship		**Quotations relating to the connections between the doctor and patient based on mutual knowledge, trust and respect for each other.**

Table 2: Thematic Analysis with Definitions

In the subsequent sections, these themes and sub-themes are illustrated with quotes from participants, to capture the sense of the material contained within the data which contributed to the construction of underlying TCs. Quotes are ascribed to pseudonyms chosen by each participant to maintain their anonymity.

3.2.1 Doctor's Role

GPs needed to be practical, to understand the administration aspects of practice and management and to engage with these whenever and wherever necessary. This required an acceptance that in the current NZ structure, charging patients to pay was not only required but also ethically permissible. This represented quite a departure from having worked in hospital-based services where no point-of-care charging occurred. Transitioning from hospital-based public funding to general practice private funding with its financial implications was a commonly encountered theme amongst trainees as expressed by Eloise, *'a big moment for me, having to get used to, it was that money changes hands'.*

Successful financial management meant maximising every dollar received for the benefit of the patient, understanding who funded what and when (e.g. ACC), avoiding possible conflicts of interest in dealing with pharmaceutical companies and, especially, accepting the necessity of charging patients with the understanding that this represents '*the value of our time and of our skill…that most patients can afford it and we can use it to help subsidise the other half that can't.*' (Nicky)

Legal issues which arose related to the *'…realising how important it is to be very clear with the communication, written communication, that needs to stand up in a court of law…'* (UnderfundedGP), and the proper management and documentation of medico-legal aspects.

The management of time and time pressure, which included not only managing patients' immediate needs but all aspects involved in their wider care, could be mitigated (at least partly) by being highly organised, as expressed by Anne, '*I learned to get organised before you see the patient… and if you don't start on time, you'll never catch up*.' Time management was also assisted by refreshing one's memory and referring to old notes, and adhering to a structure: *'I think one of the reasons why you keep to time quite well [is] you actually keep a structure… actually doing that does help me keep to time.*' (Ruby) Furthermore, actively focusing on patients' ICE, and sometimes deferring patients'

issues to the future also assisted with time management. Even with all these strategies time management could remain difficult:

> *There's all sort of different information coming at you…there's these multi-layered different things, and the task of trying to sort of manage all those balls, and then gather them together at the end, and pop them down the funnel is a very complex task. And I don't think we really teach that.* (Claire)

A number of consultation tools were very helpful to GPs. Participants could find the breadth of information required in general practice to be *'super overwhelming'* (Katie), but formal management guidelines allowed for a sense of mastery of this information. As Lani stated, *'you don't have to necessarily know everything as a GP, but just knowing that those resources are out there available for you.'* Formal guidelines provided clarity, helped to avoid making errors, assisted in integrating new therapies into management plans, and aided in the appropriate ordering of tests: *'...there's always resources and help available. So I have a few go-to bookmarks on my Google Chrome so I know where to go and look for things. In a similar vein for antibiotics, I have the BPAC guidelines bookmarked.'* (Sam)

Several different types of communication techniques were mentioned as being useful: the use of pepeha and/or whakawhanaungatanga at the start of the consultation, actively inviting the family to enter the consultation before being requested to do so, and the use of open questions *'at the beginning to ask them what brings then in and then listening.'* (Anne) Participants also mentioned the usefulness of ICE where *'the whole feelings, ideas, expectations, concerns have got me out of so many holes.'* (Maria). Also *'something that I picked up in Registrar training that was really helpful, was the double diamond. And really, really opening up right at the start.*' (Eloise). Participants thought these techniques improved patient engagement, efficiently used the available time, and improved communication significantly. It could also be an important realisation that these *'techniques from exams do work in real life'* (Ruby) to improve consultations.

Less formal sources of guidance included conferring with hospital consultants or GP colleagues, '*even just asking them for advice over the phone or writing to them through an email,'* (Lani), could be quite comforting. Limitations may exist however: '*...if I'm not sure, then probably other GPs aren't going to be sure as well...my time is better spent...looking up...what's going on.'* (Adam)

Understanding that not all GPs undergo GPEP training, yet were still highly competent was another illuminating aspect of intraprofessional life.

GPs were very aware that general practice represented a very different dynamic to hospital-based medicine:

> *This was one of those 'Aha!' moments because in the hospital you are in a broad ocean and moving/roaming around onto different wards - sometimes challenging to form relationships. But the primary care setting is similar to an office, you've got these little work whānau, with sometimes the spectrum of characters that you have in your own whānau, so that struck me as learning curve in the importance of understanding yourself and your interactions in different environments.*(Apme)

Within those interprofessional relationships, one participant commented:

> *…we should play down the distinction between doctors and nurses and general practice, that their roles are so overlapping, and too related that we should be getting to deconstruct the whole concept.* (Pete)

Another participant also expressed the importance of working in a team and the valuable *'resources that are around in the practice, like the nurses and the specialists or podiatrist or whoever that can speak that language and just not being the one that has to fix everything.'* (Lani)

Being a parent oneself, a patient and/or a teacher were viewed as signficant sources of TCs. Anne said:

> *When I became a parent, it was yet another threshold where I suddenly got it, all the stuff I've been saying to parents. Before I was a parent, I used to run the Plunket talks about all the sort of parenting problems with babies, and I just had no idea what I was doing. Honestly, it was embarrassing when I thought about it. So, I suddenly got it. I suddenly got what parents would do.*

Becoming a patient reminded GPs of what it was like to be a patient, *'it's very humbling... you remember what it's like to be anxious and fearful.'* (Anne) Teaching also provided challenges but also unexpected rewards:

> *…moving into that role as a teacher and having to think hard about what you do, why you do it, justify yourself, explore, if there are better ways of doing things, I*

> *suppose; quite a confronting thing for me. And it really does make you go away and think about things and learn your stuff and read about different models and try and kind of do your best. And I think I found that to be quite transformative.* (Sarah)

Self-reflection about the profession and personal practice led to a wider variety of insights regarding personal and professional biases. Several related to insights obtained from having been involved in a complaint against themselves, and hence understanding the importance of good communication; *'The way that I had communicated it was probably not to their liking, so that was an aha on communication,' (Chris)* and the realisation that:

> *…most complaints are very easily dealt with just by apologizing and doing nothing else. And I think that was probably something that took me a bit of time to realize that it's not the end of the world.* (Lucy)

Self-reflection also included pondering on the risk factors for making mistakes in the first place:

> *…the concept of Halt, H. A. L. T. …if you're hungry, if you're angry, if you're late, and if you're tired, you won't do a good job...that's when you're going to make your mistakes…that's a real danger sign.* (Anne)

Another participant reflected on the psychological effect of having made a misdiagnosis, and how this can lead to possible over-investigation:

> *…when you've missed a significant diagnosis, and I'm actually thinking about ovarian cancer…I can't go back to not thinking about that in every young woman that I see, and it's actually quite a troubling threshold concept, because it changes your alarm levels I think to a certain extent. It makes the consult a lot more uncomfortable for me.* (Anya S.)

Other biases could include cultural ones:

> *…coming to realise that I myself have biases that I didn't know that I had and coming to understand my brain is fundamentally pretty flawed and it makes assumptions… coming to realise you may actually possess some inbuilt cultural biases*. (Sarah)

The emotional toll of empathy, the effect of childhood trauma on adult behaviour, strategies to avoid feeling overwhelmed, and the role of a GP were all mentioned. Even though a GP could be somewhat negatively viewed as *'…the specialist of the mundane…'*, GPs were unique in being *'…the only person who specialises in the mundane and the health system.'* (Ruby) Richard's insight was a little different:

> *I don't have to be liked by patients. So, I thought that was quite liberating [in] itself.*

Uncertainty represented a fertile field for 'Aha!' moments in general practice. A major source of uncertainty was the diversity of cases which could present to a GP. This could be very daunting: *'…the breadth of knowledge that we need to have, it was just super overwhelming.'* (Katie) Also adding to the uncertainty was the often-unknown nature of cases presenting to general practice, such as realising that: *'…95% of the time when someone comes in with tiredness, that you're not going to find the cause.'* (Eloise) There was also the realisation of the complexity of presentations inherent in dealing with general practice patients: *'…people are very complicated to understand…[you] can't actually predict what they will say and how they will communicate…'* (Tom). And even when one knew the patient well: *'…you can't actually necessarily predict what they will actually come in and want to talk about, nor how they're going to talk about it.'* (Tom)

The personal reactions of participants towards uncertainty tended towards being more positive, rather than negative, although this could take time to develop. Augustine summarised his reaction thus:

> *I think the other huge thing that I've learned from general practice is uncertainty. When I first started off, there was always this concern about patients, I mean, finding it hard to sleep and all that. But learning to deal with it, I think, it's one of those things that over the years one becomes better at it.*

Uncertainty could be more challenging for others: *'yeah, it's okay to carry a little bit of uncertainty, but it can be too much uncertainty I think.'* (Adam) Or uncertainty required a certain *'…mental flexibility in general practice…spectacularly on a day-to-day basis…'* (Dr J). Sometimes confronting uncertainty could be something of a shock, as Anya S. described:

> *I was presenting a case to my teacher, and my teachers looked at me and was like, well, there isn't always a right answer. And I was like, "Well, what are you talking about? This is medicine. We have a right answer. I've got to find what the right answer is." And that has always stuck with me.*

Several different ways of managing uncertainty in clinical situations were mentioned by participants. Being confronted with uncertainty could lead one to seek for occult illnesses, particularly in paediatric patients (the examples of always checking ears and urine in a febrile child were mentioned).

Expanding the diagnostic capability of a GP was another. Adam had acquired an ultrasound for his practice and felt this was invaluable: *'…I just don't feel like I can practice safely without an ultrasound machine, given the limitations of access in my area in* [place of practice].*'*

Understanding that sometimes it was acceptable to patients that resolving the uncertainty was not actually required could be a relief. Laura said, *'…this takes the anxiety* [away] *where I'm thinking, "I can't solve this. Oh, wait, actually I don't need to solve this because that's not what they want from me!"'* Another key method to manage the diversity of cases and presentation was the meta-cognitive realisation that, not only was there not always a right answer, but also, paradoxically, that sometimes *'…there's lots of answers. Hopefully most of them are right. Hopefully not too many of them are too wrong, but there's not just one.'* (Anya S.)

Using time to help manage uncertainty was a specific strategy which utilised the longitudinal nature of the doctor-patient relationship in general practice: *'…actually uncertainty can be managed through time.'* (Steve P); *'…you don't have to fix the problem on the spot. You can try and fix it later.'* (Jay); and Aysal would *'…give them a call in two days' time and see how they're doing.'*

As Jamie observed: *'…symptoms, they often mature with time and often go away, so they're often self-limiting.'* Eloise said: *'…you've had the benefit of seeing how things evolve over time. And that helps with risk assessment, that uncertainty in general practice land.'* As Jenny observed about general practice:

> *... it just kind of changes your thinking in terms of you don't have to know the answer today. You don't have to send the patient home with a diagnosis. You can just live with what's going on at the moment, as long as you've got a plan and a safety net… Learning to live with uncertainty… which I think is very different in general practice versus hospital medicine… You kind of learn that you've got more time with the patients and you can bring them back.*

One corollary to this, however, was making sure your patient was happy with this approach:

> *I think one has to be a bit of a salesperson of risk and uncertainty, so that the patient feels like that they are getting a legitimate service rather than you say, "I don't know, here's your uncertainty off you go".* (Steve P.)

The longitudinal aspect of care in general practice aided in the management of uncertainty: *'I love it because we have time with our patients, but not [an] all-in-one concentrated effort.'* (Dr J). Sophy said:

> *It also blows my mind how many people you can understand and remember them, you just see the name and think, oh yeah, that person I'll do it this way, without really thinking about it.*

Claire concluded:

> *The good thing about general practice is, there's a journey with people over time as long as you are there with them and working things out as much as you can, maybe, just journeying along with people, is as good as being perfectly right all the time.*

3.2.2 Patient's Role

Three themes were identified within the Patient's Role theme: Patient Needs, Patient Adherence and Patient Context. Important learning regarding the needs of the patient could manifest in several ways. One was: *'…this whole concept of ticket to entry consultations…[to] see if you were a good enough doctor for them to trust you with whatever their issue was.'* (Maria) This could be: *'…really annoying but actually it's a compliment to yourself because they gained your trust in the 15 minutes that you've spent sorting out those sore toes.'* (Vicki) There was also: *'…learning about the doctor's agenda and the patient's agenda…'* (Clare) and understanding that these were not necessarily the same:

> *It was a breakthrough moment for me when I began to understand what the patient wants, as opposed to what I wanted. Sometimes it was completely different and…we have to figure out, we have to understand what they want. We may not necessarily be able to deliver it, but if we don't know, we're always going to be out of sync, and they'll be dissatisfied.* (Pete)

As Andy stated: *'…I see general practice as an area of identifying the hidden agendas, not necessarily always finding pathology.'* Even minor consultations could be significant for the patient, even if not so much so for the doctor:

> *…the more you do general practice, the more you realize that those little things count a lot, and if you can fix your sore toe or help them with something that may seem not that significant medically, it goes a long way.* (Nic)

Several aspects of the second theme, Patient Adherence, were highlighted by participants. The importance of physically checking the medication boxes was one strategy, advocated by San: *'So I actually request them to bring [the boxes], and ask them one one-on-one whether you're taking this, or whether you're not taking this.'* Engaging with the reasons for why patients did not adhere to management plans, such as lack of transport, was helpful in maintaining the therapeutic alliance: *'…in those situations we try to contact the hospital so they book the appointment and then I take it further. Some patients may attend.'* (Somi) Language barriers could also impede adherence as Lani found, *'when you can't get them to adhere to a plan… speak that language.'* Understanding the relationship between non-judgemental explanation and adherence was also revelatory:

> *Understanding that when you say to them it is not your fault that there is a genetic component to it* [gout]*, I didn't understand how important this is to them until I saw it on their face, the relief that they get, and how more compliant they are with their treatment and how much [more] trusting they are of you, when they see that you are not actually judging them…I have to make sure I say to them it's not your fault and it always makes a big difference.* (Amy)

Finally, perhaps the hardest lesson regarding patient adherence was mentioned by Lucy:

> *…learning to accept and manage patients who don't want any active treatment for what would be a curable disease, the person with a curable cancer and they've chosen to have no treatment.*

The third Patient's Role theme was that of Patient Context. This theme had several different aspects, but key was the recognition that no deep understanding of the patient could be possible without this:

> *Patients aren't a vacuum. They don't exist in a vacuum. When you first start out, you're very keen to be able to deal with that one problem that they come in for, and it's in a nice little vacuum. It doesn't work. That's not how people are. They have a context. They have a family. They have a work situation. They have mental stuff going on. They have social structures. They have a whole load of stuff, and the beauty about general practices is that you slowly get to pull all the bits of wool out, and you get to uncover all those things around them, and it's just beautiful when you grow up with them, and you can see where they all fit, and where everything fits.* (Anne)

For Dr. T., this perspective went, perhaps, even further:

> *…it didn't matter what we did as doctors, we could not remedy all of those other factors that actually impacted our patients' health. And it was a huge broader issue.*

> *It wasn't just your own health or your family's health, it was your village's health and your town's health and your district's health, and the politics and the financial and the economic situation of the country that you actually live in, including things like war and poverty and food poverty. And that was a real 'Aha!' moment to me. And from the very first day, it would focus me on looking always at patients in a really huge, holistic manner.*

Understanding this bigger picture reduced the likelihood of blaming the patient for their condition or ordering expensive and unnecessary tests. It could also prevent misdiagnosis and aid cultural awareness. Te Whare Tapa Whā was explicitly mentioned as a useful tool for exploring patient context: *'...it's fantastic I use [it] for patients I see regularly with mental health and it's surprising how many different aspects of their life that you reveal, but it does take time.'* (Augustine)

3.2.3 Doctor-Patient Interaction

Two themes were identified in this meta-theme: Consult-as-Therapy, and Relationship. The first theme included three sub-themes: Explanation, Listening and Presence. Explanation was an important component of the consultation especially as:

> *…most of the time, by the time the patient gets to the sub-specialist in the hospital, the mundane thing gets blown off to say, "Oh, I'll follow up with your GP." Or just gets told that, "Not to worry about it." Whereas actually, as a GP, you have to be able to reassure the patient on that or know something about it.* (Ruby)

and:

> *…its helpful to be able to communicate that to patient's in a way that's reassuring.* (Steve P.)

Suzy noted how that: *'…actually people improved a lot just through talking to you when you're giving them advice.'* Explanation was an important part of educating the patient as Claire related: *'I've noticed now, when I explain things to patients, you see them get a light bulb moment, "Oh, that's why you want me to take that."'* One specific type of explanation was normalisation: *'…by normalizing conversations, we can actually get patients to tell us more and help to reduce anxiety and get them on board.'* (Bee)

Listening was an important skill as: *'…just hearing them, in part, was therapeutic…'* (Ann) and *'the concept of that sometimes listening is a treatment…'* (Jason) because: *'…patients don't always want*

to know. They don't want to be told what's wrong. They just want to work through it with [someone]…' (Dr J.). The value of listening may be learnt quite incidentally and unintentionally:

> *…you see silence used. Sometimes intentionally, silence is used by a nurse or a doctor, but sometimes they just had no idea what to say cause it's too overwhelming all around. So, silence gets used, and then you see how effective it is, because so much gold comes out from patient or family.* (Andrew)

Listening could help diffuse strong emotions such as anger or frustration, and was considered an essential skill for general practice:

> *The hardest concept but probably the most valuable in general practice…is communication skills... Essentially listening more before you give advice, I think that not giving into that impulse of giving advice before you've been curious enough and asked questions and make sure you've explored what the patient's own thoughts are first.* (Danielle)

The third aspect of Consult-As-Therapy was the sheer presence of the doctor, which in and of itself had a therapeutic benefit:

> *…just being there and talking with them and having that therapeutic relationship, even if you're not giving them a prescription or anything like that, can still be really quite a powerful thing, which I sort of didn't really think about when I started general practice.* (Maria)

This could be quite a revelation:

> *…One of the biggest concepts that I learnt in my Registrar equivalent year was that actually sometimes you don't actually need to give or prescribe anything, or do what you think you need to do, for the patient to be satisfied. So, it was quite different coming from this biomedical based secondary care system where you physically give or do something-You give a prescription, a certificate, or leaflet or investigation. So, sometimes when I was seeing patients, what was in my head was what do they want from me? Am I giving them what they want? And I remember speaking to my trainer at the time and saying, "I'm speaking to these patients, but they don't actually want anything from me, they just want to talk. Why would they come and see me?" Why would they want to talk to 20 something year-old? Do I have anything of value to add?" I remember my trainer saying to me, "Actually they just need to talk to a trusted professional, and you doubt how valuable, or you underestimate how valuable that is."* (Apme)

Susi considered: '…the power as a doctor, is a drug [in itself]', and Clarie found in difficult consultations this may be the only 'medicine' available:

> *Some of the difficult situations that you face that you can't cure, well, there's a lot of those, but what comes to mind, a child with cancer and a family, and that was one of my early times in general practice, quite a difficult situation that you realize that just being there with the family was all that you could do.*

And as Lucy succinctly stated: *'…sometimes all you have to do is sit there and listen and do absolutely nothing. And that can be a worthwhile consultation to the patient in itself.'*

The final theme, Relationship, was considered pivotal to the practice of general practice medicine: *'…the relationship between the GP and the patient is probably more important than anything else that you can do.'* (Maria) This was considered so important that maintaining the relationship takes precedence over almost all else:

> *…we just about [always] have to go with the patient on what they believe so that we can maintain that relationship. Then at times you can actually say, speak into it and then you can actually help them change that.* (Kathy)

Creating this relationship as a partnership began with the choice of the first question in a consult:

> *…instead of starting your consult off with saying, "How can I help you?" …to say, "What brings you in today?" and …that it does bring a sense of, you're there with the patient rather than being there to help them as the person in power.* (Anne)

To continue this relationship during a consultation required: *'…that absolute concentration of attention and just the sort of intensity of what was happening between the two people.'* (Clare) It also required*: '…giving the patient something of yourself. So, you actually connect on a human level, human to human.'* (Eloise)

Self-monitoring and self-reflection could finely tune this dynamic: *'…if I am not trusting the patient then they are probably not trusting me… So, using my feeling of trust or rapport is a good indicator of how their feeling has been.'* (Danielle)

4 Discussion

4.1 Strengths and Limitations

This study recruited fifty participants, a reasonably large number for a qualitative study. This may have reflected the diversity of the type and nature of TCs the participants had experienced, in that reaching a saturation point did take some time. Nevertheless, a saturation point was found, as evidenced by the same TCs being identified and repeated in the final four focus groups with no significant new TCs being obtained thereafter.

Another strength of this study was that it included both the student and teacher. This serendipitously evolved, as originally, we had intended to only interview current GPEP Registrars and Fellows within five years of obtaining Fellowship. Our rationale for this were studies suggesting that students and recent graduates were the most informative group to identity TCs.[34,48] After several recruitment rounds, however, we expanded the inclusion criteria to include MEs. We also included all GPs from the pilot study as the study's methodology was unaltered following the pilot study. By involving MEs, this more diverse group added greater insight to the range of TCs identified. It was evident that valuable TCs could also be obtained from those other than current or recent students. This may underscore that the nature of general practice and medicine is, in fact, a discipline of life-long learning with TCs continually being discovered and learnt during a lifetime of practice. For example, TCs identified by Registrars could reflect coming from recently taught techniques, such as the use of the acronym ICE, reflecting the TC 'Right tool, right word, right place'. More experiential TCs could come from the more senior Fellows and MEs. For example, the understanding of the impact that one's internal state (hungry, angry, late, tired) can potentially have upon one's competency to practice (identified in the TC 'professional biases'), was primarily identified by the 'experts'. Hence expanding the range of participants became an unexpected strength of this study.

The study was conducted by two researchers who both had medical general practice backgrounds (one a current GPEP Registrar, the other an academic general practitioner with 35 years clinical experience). The latter has a PhD in bioethics and decision-making and is an experienced qualitative researcher and academic general practice medicine teacher. Our joint attributes, we feel, enhanced the analysis of data based on our combined understanding of the general practice context. We

discovered a greater range and breadth of threshold concepts than the 2015 study by Vaughan et. al.[38] This may reflect the importance of having investigators who are greatly familiar with the context of the area being studied when attempting to identify TCs specific to that discipline. The earlier study was carried out by non-medical researchers and educationalists. This may also reflect differences in the methodology between the two studies and smaller numbers in the 2015 study. It is worth noting that participants' responses from the same focus group were at times influenced by the TC expressed by the previous speaker and tended to follow on a similar tangent. Although this potential limitation was relatively minor or minimised by giving participants brainstorming time alone at the beginning to think of their own original TCs before discussing around the group, this remains one potential bias.

There were also several limitations to this study. The first limitation was the relatively limited diversity of the participants' location. Most participants were from the three main centres Auckland, Canterbury and Wellington with comparatively low representations from other areas. Hence, the study results may not fully reflect all aspects of general practice, particularly rural NZ general practice. And practices supporting specific communities e.g. Māori, Pasifika, low socio-economic equity groups. Further studies in these general practice settings may reveal different TCs specific to these types of practices which were not identified in this study.

A second limitation is an acknowledgement that there is currently debate in the academic literature about what defines and constitutes a TC.[53] Nevertheless, we regard the concept of TCs as a potentially useful pedagogical tool for curriculum development and the teaching and learning of general practice. Our approach was to emphasise the transformative aspect of TCs in the focus groups, which is the aspect held in common by all proponents of TCs. We also utilised the affective component of this – the "Aha!' moment – which appeared to allow rapid recollection of such learning experiences, sometimes decades earlier. We acknowledge, however, that the broad and encompassing definition of TCs and the variety of ways in which they can be identified in different studies means that there is room for debate and critique into what is and what may not actually be a TC in each case.

Thirdly, and this is discussed in more depth in the next section, this research only looked at the perspectives of doctors. Patients may well have important TCs to contribute to this research.

4.2 The place of Te Whare Tapa Whā

The Te Whare Tapa Whā model was explored in this study and proved to be of significance in both the data collection and analysis of results. This model was used in the focus group presentation as a means of presenting, portraying and teaching the all-encompassing definition of a TC. In this case, a range of domains – family (taha whānau), physical (taha tinana), mental (taha hinengaro), spiritual (taha wairua) – are portrayed by Te Whare Tapa Whā as a holistic model for health. Te Whare Tapa Whā was a great tool in helping participants understand this holistic definition of a TC and for stimulating a range of answers in the discussion. Consequently, or perhaps because this reflects how GPs have absorbed this model, we found it did not act as a sub-theme, theme or even meta-theme, but as a meta-meta-theme, informing and underpinning all else. Even though there were only rarely overt references to Te Whare Tapa Whā (mainly in the spiritual realm), we could not tease out the four domains of Te Whare Tapa Whā from one another from the material provided by participants. From our analysis of the results, it became apparent that Te Whare Tapa Whā was therefore present as an overarching construct and influence, woven ubiquitously and seamlessly linked throughout all the analysis. Hence, we came to regard this as a meta-meta-theme.

On closer inspection, we also wondered whether the consultation could be conceptualised as two Te Whare Tapa Whās at play, each reflecting each other; one whare from the GP's perspective and another whare from the perspective of the patient. If one imagines a building being reflected in still water (see Figure 5), the primary and uppermost Te Whare Tapa Whā would be conceived as that of the patient. It is their story, narrative, and context which sharply defines the consultation. The doctor reflects that whare in the water, which stands for the context of the doctor's persona, knowledge and skills so what is seen is alike yet different, with the reflection being how the patient's whare might be changed from this kōrero. From these two reflections, the patient's 'real' whare and the reflected or 'possible' whare, places of commonality are established, these being the pillars (both reflected and real) touching on the surface of the water: the more pillars the better for the strength of the whole. And thus, the consultation proceeds.

Figure 5: Reflecting Two Structures (Copyright C. Lee. Reproduced with permission)

There are likely distinct TCs to be found in both these whares with each having important implications for each other. This study focused only on the TCs from the perspective of the GP and what the GP found to be significant learning points in their role and interactions with the patients. Glimpses of the possibility of another dimension i.e. TCs for patients, however, were seen in this study. What the GP finds transformational and significant to their practice and their interaction with the patient may either concur or differ from what the patient may find transformational to their well-being and interaction with the doctor. There may be TCs that patients also need to cross in their medical journey and relationships with the doctor for that care to become truly effective. Patients' own TCs may well have enormous potential benefit to GPs. It would be a useful and important future study to also identify these 'Aha!' moments from the perspective of the patients as learners of their own wellbeing and their journey in the medical system.

4.3 Identifying Threshold Concepts from This Study

The construction of TCs went beyond the immediate thematic analysis of the material provided by participants. Few participants articulated immediately and *in toto* a TC, but more often they described a situation in which they had felt transformed or had experienced the affective awareness of an 'Aha!' moment. This was the material from which we constructed the thematic analysis, but this required further analysis to identify what TCs may be present in the data. In doing so, we looked for over-arching elements, characteristics or rules which captured and related to all the quotations collated within that individual theme or sub-theme.

Essentially, we were seeking to construct, and equating TCs, with what are known as heuristical decision-making rules. Heuristics have been recognised in decision-making literature for approximately the past 50 years.[54] They can be conceived as '…a rule or guideline that is easily applied to make complex tasks more simple'.[55] An everyday example of heuristical thinking is the use of proverbs or whakataukī: e.g. 'a stitch in time saves nine', 'the early bird gets the worm'. Proverbs encapsulate a huge amount of wisdom based on experience in many different types of situations, which can then be applied in future situations when similar, but not necessarily, identical circumstances arise. Heuristical decision-making has been found to be quick and efficient, particularly when making conditions under great uncertainty.[56] The need for speed and efficiency whilst always tolerating some uncertainty certainly characterises general practice decision-making.

From analysis of the themes and sub-themes, a total of 18 TCs were identified amongst 50 GPs (see Table 3). These TCs were reflective of major learning points encountered by the participants during their years of training, experience and work in general practice. These were significant concepts which had transformed the way they viewed their practice, patients and themselves in the real world of general practice. They are not specifically related to any one type of medical diagnosis or condition. (Interestingly, specific diagnoses only formed a very small amount of the material given to us by the participants.) Potentially in real life, there are many ways of experiencing these TCs. This means, too, by using them as starting points for curriculum development, one could construct many ways of teaching them, both in terms of content and process.

Meta-meta-theme	Meta-theme	Theme	Sub-theme	Threshold Concepts
Te Whare Tapa Whā	**Doctor's Role**	**Administrative Aspects**	Financial	**Money makes the practice go round.**
			Legal	**Be a legal eagle.**
			Time Management	**Manage time or it will manage you.**
		Consultation Tools	Management Guidelines	**Guidelines, GPs' little helpers.**
			Communication Techniques	**Right tool, right word, right place.**
		Intra- and Interprofessional Aspects		**The whole of the practice is greater than the sum of the parts.**
		Personal Experiences		**The personal enhances the professional.**
		Professional Biases		**Beat biases by reflection.**
		Uncertainty	Sources of Uncertainty	**Chew the CUD – Complexity, Unpredictability, Diversity.**
			Reactions to Uncertainty	**Embrace the uncertainty.**
			Management of Uncertainty	**Not knowing is knowing.** **Seek and you shall find.** **Waiting and seeing, waiting and being.**
	Patient's Role	**Patient Needs**		**Look, listen, think between the lines.**
		Patient Adherence		**Treat the patient beyond the disease.**
		Patient Context		**No patient is an island.**
	Doctor-Patient Interaction	**Consult-as-Therapy**	Explanation	**Words work wonders.**
			Listening	**Hearing is healing.**
			Presence	**Being you and being there.**
		Relationship		**The relationship is worth a thousand consults.**

Table 3: Identified Threshold Concepts

These TCs each act as a heuristical device, concentrating the essence of the experiential wisdom of our participants in a simple, memorable phrase deliberately designed in this way for ease of recollection. They act similarly to medical proverbs, and by being summarised in such a fashion they can be used in a huge variety of situations, both those foreseen and those not predicted by any formal training scheme.

Medical proverbs are not new. Within the Hippocratic Corpus there is a section entitled 'Aphorisms'.[57] An aphorism is defined as '1. a concise statement of a scientific principle usu[ally] by a classical author' or '2. Any pithily expressed precept or observation; a maxim.'[58] More modern examples include; 'If but one patient is saved, the effort is worthwhile,…costs should not be considered in decisions about individual patients,…[and] [w]hen in doubt, do it'.[59] Where TCs and medical proverbs differ, is in the transformative aspect of the former which is lacking in the latter. One can read an aphorism, but it is not usually associated with a large change in one's worldview of a subject. The one point of commonality of all definitions of TCs is this greater transformative aspect. In this respect, TCs are far more akin to the 'paradigmatic shift' described by Thomas Kuhn, where a revolutionary concept (i.e. the new paradigm) upends and makes obsolete old ways of thinking.[60]

In constructing the wording of the TCs, we became aware that the expression of the TC is highly culturally dependent. For example, in these constructions we discussed possible wording based on Western European and Pākehā cultural motifs, advertising slogans, Christian bible references and more. For example, one (almost) direct quote, is the TC 'No patient is an island'. This referenced John Donne's 17th Meditation: 'No man is an island, entire of itself'.[61] The TC 'Guidelines, GPs' little helpers' came from envisaging the helpful elves of Santa Claus (i.e. Santa's little helpers). Others, such as 'Words work wonders', use alliteration to aid recollection and memorisation.

Given these innate and unavoidable cultural biases, we felt it would be far preferable wherever possible to consider re-writing these TCs in relation to Māori knowledge and wisdom, in order to uphold our obligations to considering Te Tiriti o Waitangi partnership obligations and widen their application. We do not feel we have the necessary skill set, both being of non-Māori origin to undertake such work without risk of harm and/or improper cultural appropriation. After very helpful

discussion regarding this with Zoe Bristowe, Professional Practice Fellow and Programme Manager, Division of Health Sciences' Māori Health Workforce Development Unit (MHWDU) at the University of Otago, and of Ngāpuhi and Ngāti Pōrou, we have chosen not undertaken this, at this stage. On researching in this area, we do believe that such an approach may well be feasible: for example, it might well be that 'No patient is an island' could be appropriately replaced with 'Nā koutou i tangi, nā tātau katoa'. 'When you cry, your tears are shed by us all'.[62 p68] Another possible example would be replacing 'The whole of the practice is greater than the sum of the parts' with 'E hara taku toa, I te toa takitahi, he toa takitini'. 'My strength is not as an individual, but as a collective'.[62 p117] Even the use of the word 'cud' can be culturally-specific: if one if not particularly aware of the gastric processes of bovines its use can be deeply mysterious in the TC, 'Chew the CUD – Complexity, Unpredictability, Diversity'. In this sense the heuristical rendering of TCs does open itself up to the limitations of all metaphorical constructs,[63] in that it does require a certain set background knowledge and experience to make sense.

4.4 What This Study Adds to the Understanding of Threshold Concepts

This study is one of very few investigating the possible TCs to be found in the teaching and learning of postgraduate general practice.

The concept of VTs explored in the study by Vaughan et. al. (2015),[38] aimed to build upon TCs with a greater focus on the transformational learning obtained through practical experiences, rather than theoretical learning, encountered in general practice, engineering and carpentry. These VTs can thus be considered generally congruent with TCs. There may, however, also be some limitations in this approach as, due to this focus, some key epistemological concepts may have been missed. In addition, the researchers were of educational but non-medical backgrounds and therefore may not have been aware of the knowledge-based TCs of general practice medicine. Our results were inclusive of and confirmed the VTs/TCs identified by the earlier study. Both our study and Vaughn et. al.[38] identified the doctor-patient relationship, the value of listening, the importance of patient involvement and uncertainty as important TCs/VTs. In addition, however, we have also identified financial, medico-legal and time management, the use of guidelines and taught communication techniques, intra- and inter-professional relationships, personal experiences, professional biases, patient adherence, patient context and the therapeutic power of explanation and presence as new

TCs, as well as providing a more nuanced and detailed analysis of uncertainty, the patient's role, and the doctor-patient relationship as TCs. This may reflect the benefit of a narrower range of focus for our study, compared to Vaughn et. al. (2015)[38] where three different fields (general practice, engineering and carpentry) were studied, thus, likely resulting in a smaller number of broad and less specific potential TCs being identified in each of the fields. Nevertheless, the Vaughan et. al. (2015),[38] study is a comparable study as they also interviewed GPEP Registrars, albeit with smaller number of 14 participants. It is worth noting here that there was a further study carried out by Vaughan in 2016[64] that sought to further develop the notion of VTs as a useful tool for identifying significant learning experiences, rather than specifically attempting to identify the range of VTs/TCs in general practice. This study identified skills around breaking bad news and importance of collecting clinical evidence; learning from colleagues, self-reflection and experiences; the power of being present and listening; and the underlying relational aspects as being potential VTs. Although this subsequent study had a similar number of participants to our study - 57 GPs - the data collected were only brief written accounts of one single 'particularly powerful learning experience' per participant and hence may remain somewhat potentially limited in identifying new TCs.

It is interesting that several TCs related to the administrative aspects of general practice. We believe this reflects the very different business models between free-at-point-of care (the hospitals) and partial fee-for-service (general practice). It is pleasing to see that some already taught guidelines and communication tools proved to be 'Aha!' moments for participants, and thus were considered by us to be examples of TCs. What is perhaps more surprising, given that teamwork does also occur in a hospital-environment, is the number of quotations captured under intra- and interprofessional aspects leading to the construction of the TC, 'The whole of the practice is greater than the sum of the parts'. Perhaps this reflects a greater degree or a unique kind of teamwork that is found in general practice compared to hospital-based medicine. It may also reflect that being part of a more flattened, horizontal power structure associated with general practice leads to a greater awareness and/or appreciation of the role and value of each team member.

Another TC identified was, 'The personal enhances the professional'. This is worthy of further, future exploration. Only a small number of participants offered such information, but these may reflect the way the focus groups were facilitated, in that the topic was introduced as relating to the perspectives

and experiences of the professional GP. The results, although relatively few, suggest that this may be a fertile area for future exploration as it is known that personal experiences are also valuable in that they contribute to the transitioning of identity which is an important aspect of wholly becoming a GP.[27]

Whilst a wide range of professional biases and the impacts of discovering them were discussed, the one common factor was that the process by which participants could recognise and identify these, then ameliorate the negative effects thereof, was by self-reflection. Self-reflection has a long and noble history of forming part of the training in general practice (for example Balint groups) but has only more recently been introduced into hospital-based specialities. It may be that this aspect of general practice training deserves more active promotion within the GPEP (see also section 4.5).

Uncertainty, and the many facets of it, formed the largest category of quotations in this study. If this alone is indicative, then it forms a majorly important series of TCs. Uncertainty is a concept which has continued to surface as an important issue across multiple medical specialties for both under and post-graduate medicine throughout the years.[23,25,26,30,37,65] TCs were identified in considering the sources of uncertainty for GPs, which compromised of the three factors: the **c**omplexity of patient presentations, the **u**npredictably of any working day, and the sheer **d**iversity of what could occur (hence 'Chew the CUD'. In order to manage these sources, they had to be reflected upon and understood as well as possible, even if the uncertainty was not fully resolved. Emotional reactions to coping with uncertainty could oscillate from negative to positive and certainly building up resilience to uncertainty and a degree of acceptance was beneficial. We decided that the phrase 'Not knowing is knowing' encapsulated the ways of trying to manage uncertain clinical cases. Management could be via reducing uncertainty such as seeking out occult illness or performing tests ('Seek and you shall find'), but management could also be allowing time to reveal what was going on ('Waiting and seeing, waiting and being'), or simply recognising and supporting patients on those occasions where the patient did not seek resolution, but understanding from another human being of what they were experiencing ('Not knowing is knowing). Understanding that, as GPs, one did not always have to fix everything, every time, freed one from an often unhelpful, unwanted and unnecessary perceived professional obligation.

What was helpful for patients, from the GPs' perspectives, was understanding patients' needs well. This could be achieved by applying careful attention to not only what was said, but what was not said i.e. to silence, to body language, to implied but not verbalised meanings. Being attentive to these aspects could allow, perhaps paradoxically, for the consultation to flourish. Equally, to maintain and enhance patient adherence to treatment possibilities, also called for nuanced approaches prioritising the patient, rather than the illness. Of marked importance was learning how important and central the patient's context was in providing quality care; this was clearly a transformative area for participants.

Another revelation for those learning general practice was the realisation of the therapeutic potential of the consult itself, over and above any prescription or other medical action. Paying careful attention to how one explained situations to patients, knowing when to not talk but simply listen, and always being present in the consultation were crucial in providing good care. Participants felt this was a defining moment when they understood this, profoundly altering the nature and type of care they provided for patients. It also clearly delineated general practice from hospital-based care.

Closely linked to the consult-as-therapy theme was the realisation of how precious and special the doctor-patient relationship was: how the preservation and maintenance of this relationship was a key TC in understanding how general practice worked. Without that relationship being healthy, comparatively little could be achieved. Due prioritisation and attention to this, meant that in the long run more could be achieved, even if in the short-term a GP may need to wait longer than they, themselves would have preferred.

The human connection and experiences encountered in the practice of medicine is a crucial part of medical training, giving rise to TCs in various forms in different studies.[19,23,34] The relational aspect has also been shown here to be an obvious and central part of general practice. Understanding and appreciating this a milestone in becoming a GP. A significant portion of a GPs work is achieved through the very nature of the consultation itself and the relationships that form within and from that. Relational aspects are seen not only in the doctor-patient interaction meta-theme but are also embedded throughout other themes; for example, communication techniques such as the use of Whakawhanaungatanga, which enhances the doctor-patient relationship with Māori.[66] Furthermore,

the relational aspects also included intra- and interprofessional relationships in this study, extending the existing literature.[21,22] Our detailed analysis offers an expanded understanding of how relationships and TCs may interconnect. It returns to the previously discussed metaphor, of the doctor-patient relationship being characterised by two Te Whare Tapa Whās touching. It emphasises that when doctors and patients meet in a clinic, behind the door, it is two people being together, in a specifically intimate way.

4.5 Implications and Recommendations for Teaching and Learning

The six domains of competencies required of a GP in NZ as per the Curriculum for General Practice, 2014 are: Communication, Clinical Expertise, Professionalism, Scholarship, Context of General Practice, and Management.[40] It is interesting and encouraging to find that the TCs discovered in the results of this study could be mapped into and linked to each of the domains in various ways (see Table 4). This shows that these TCs are linked to core competencies of general practice teaching and learning. The TCs identified in this study are also of great relevance to the GPEP as they are the responses of the NZ's very own GPEP Registrars, RNZCGP Fellows and MEs living and working in the context of NZ general practice. Currently, however, the learning of these TCs may not be as well-structured or as directed as may be the ideal. Many, if not most TCs, were learnt by our participants *ad hoc* during unstructured clinical experiences rather than via formal teaching.

Curriculum domains	Threshold concepts
Communication	Right tool, right word, right place.
	Look, listen, think between the lines.
	Words work wonders.
	Hearing is healing.
	Being you and being there.
	The relationship is worth a thousand consults.
Clinical Expertise	Guidelines, GPs' little helper.
	Seek and you shall find.
	Waiting and seeing, waiting and being.
	Not knowing is knowing.
	Chew the CUD – Complexity, Unpredictability, Diversity.
	Embrace the uncertainty.
	Beat biases by reflection.
Professionalism	The personal enhances the professional.
	Money makes the practice go round.
	Be a legal eagle.
Scholarship	Guidelines, GPs' little helper.
	Beat biases by reflection.
	The whole of the practice is greater than the sum of the parts.
Context of General Practice	No patient is an island.
	Treat the patient beyond the disease.
	The whole of the practice is greater than the sum of the parts.
	Money makes the practice go round.
Management	The whole of the practice is greater than the sum of the parts.
	Money makes the practice go round.
	Manage time or it will manage you.

Table 4: Curriculum Domains and Threshold Concepts

To increase the efficiency in learning these vital aspects of general practice, TCs could be incorporated into the GPEP curriculum in various ways (see Table 4).One method of teaching these TCs might be in the form of a series of lectures at the weekly GPEP Year One seminar days whereby each of the TCs may be addressed with their relevant themes and sub-theme material, together with clinical cases further illustrating this TC. An alternative, and possibly more effective method, would be to discuss each of the TCs at the GPEP Year One small groups and/or GPEP Year Two and Three learning groups facilitated by the ME. TCs and their examples could be brought up by the facilitator, or by the Registrars, and discussed within the group in the form of case-based scenarios and linked to specific TCs.

For first year Registrars the teaching may focus more on the theory whereas more senior years may focus on cases trainees have experienced themselves which they could link to this earlier training.

Although many TCs (if not all) may be viewed as necessitating experience or first-hand encounters in order to fully understand them or 'cross the threshold', there is value in being able to teach these often difficult and hidden concepts to the learner in a direct way. TCs tend to be troublesome and require recursive learning attempts before the liminal space is crossed and insight is gained. Learning something of the theory of TCs, then being given the opportunity to express and discuss the identified TCs found in general practice as part of a structured teaching session, may enable the trainee to access and more quickly grasp these significant learning points earlier in their general practice journey. Additionally, it is also worth noting that even taught techniques identified in this study as part of a TC (e.g. specific communication tools), often still required something more in order to be fully grasped and finally transform their practice. Hence taking these taught techniques a further step by recognising them as TCs and teaching them as such may provide added advantage to the trainee.

It was noted that throughout the focus groups there were variations in the way different participants presented their TCs. Some participants reported specific cases or scenario-based examples which lead-to and reflected an underlying TC. Meanwhile other participants directly reported the actual underpinning TC without any specific cases or scenarios. The strategies for applying TCs into clinical teaching have yet to become widely accepted and thus there is a need for research in this area.[53] Nevertheless, TC based clinical teaching has been shown to be feasible[66] and learning via use of contextualised scenarios together with discussions of lived experiences, TCs have been shown to benefit student learning and understanding.[68] Broadly speaking, to incorporate TCs into the curriculum, it needs a design which encourages students to reflect upon their ways of thinking and practising, and to pay attention to the 'how' and 'why' of their ways rather than the 'what'.[69] Understanding TCs means learning and hopefully, appreciating the uniqueness of general practice and enabling the transition and acquisition of the new identity. [27] The trainee does not *know* general practice, they *become* a GP.

4.6 Conclusion

Fifty NZ GPs reported on their transformative ‘Aha!’ moments throughout their general practice journey. Analysis of these uncovered 20 TCs from a tree of themes beginning with the overarching Te Whare Tapa Whā, which underpins medicine in Aotearoa. This study served to identify new and pre-existing TCs, adding the benefit of greater detail, specificity and guidance to those previously described. We presented the TCs in a heuristical manner for ease of use and recall. The format of TCs proposed by this study, and the associated thematic material can be used to inform and improve the GPEP curriculum. We would suggest that in Year One, Registrars are taught the theory of TCs and given these examples. Small group training in later years could reinforce this knowledge by encouraging trainees to recognise and discuss their own important learning moments, using this theory, to help consolidate and promote their identity as good GPs. In addition to considering these findings and potentially integrating them into the GPEP training, we would also encourage the RNZCGP to consider further funding research into several areas: 1. with those well versed in Te Ao Māori and Te Reo to expand upon further defining these TCs in a bilingual and inclusive manner, 2. identifying TCs specifically relating to rural general practice, 3. researching what TCs patients may experience in seeking general practice care and how these may facilitate (or not) the delivery of care and care outcomes, 4. how personal (non-medical) experiences of GPs can influence the subsequent of experiencing professional TCs and 5. exploring whether greater teaching emphasis on self-reflection may improve gaining insight into personal biases and increasing tolerance of uncertainty.

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6 Appendices

6.1 Survey

Threshold Concepts in General Practice Study

Queries contact Dr Anna Chae
E: a.chae@otago.ac.nz T: 02102570110

*1. Full name

*2. Email

*3. Phone

*4. Address with post code (to send voucher)

5. Age

6. Ethnicity

*7 Position

- GPEP1
- GPEP2
- GPEP3
- Fellow year 1 post grad
- Fellow year 2 post grad
- Fellow year 3 post grad
- Fellow year 4 post grad
- Fellow year 5 post grad
- Fellow year 5+
- Medical educator
- Other (please specify)

*8. Location based

- Northland
- North West Auckland
- Central Auckland
- South Auckland
- Waikato
- Hawke's Bay
- Bay of Plenty
- Manawatu
- Wellington
- Canterbury
- Otago/Southland
- Other (please specify)

*9. Preferred pseudonym if your quote if used in the report

6.2 Information Sheet

INFORMATION SHEET

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate, we thank you. If you decide not to take part, there will be no disadvantage to you, and we thank you for considering our request.

What is the Aim of the Project?
The aim of the project is to identify threshold concepts in the teaching of postgraduate General Practice. The term 'threshold concept' describes those moments in a learner's experience when transformative learning takes place, often accompanied by the emotion of an 'Aha!' moment, and your understanding of General Practice shifts or alters in some way larger than merely learning that piece of information.

Threshold concepts are only just starting to be recognised and identified within General Practice, however, and there is only a little research data available yet for knowing what threshold concepts are important for the teaching and learning of General Practice within Aotearoa/New Zealand. What data that does exist, in this and other medical specialities, suggests that it is the students or recent students who are best at identifying their own threshold concepts, rather than teachers. That is why we would like your help.
This project is being funded by the Royal New Zealand College of General Practitioners.

What Types of Participants are being sought?
We are looking for participants who are either current GPEP Registrars, recently graduated Fellows (obtained the Fellowship to the RNZCGP within the last 5 years) or GPEP Medical Educators. If the above criteria do not apply to you, you will not be able to participate, and we apologise for any inconvenience. If you can participate, as a token of appreciation you will receive a **$50 PAK'nSAVE voucher**.

What will Participants be asked to do?
Should you agree to take part in this project, you will be asked to:

- give your informed consent
- provide basic demographic data i.e. age, gender, ethnicity, current year of training or post-Fellowship graduation
- **attend a focus group** of no more than 12 participants, held **via Zoom**. Focus groups will last **up to 60 minutes** duration. At a focus group, a brief presentation will be given describing what is a threshold concept, how these may be identified and the types of knowledge which may be involved in a threshold concept. In smaller groups you will participate in exercises designed to help identify

threshold concepts. Following this, you will re-join as one group and **discuss what you have identified**. This whole group discussion will be recorded for future transcription and analysis.

- no preparation is required; the only time commitment is attending the one-hour focus group.
- your participation, non-participation or withdrawal from the research will not have any effect on your assessment (if a Registrar) or on your relationship with the College.
- no patient information should be discussed in the focus group
- you are free to withdraw from the research at any time if you become discomforted in any way from participating. If you do withdrawal, we will contact you within 72 hours to check that you are OK.

Please be aware that you may decide not to take part in the project without any disadvantage to yourself.

What Data or Information will be collected and what use will be made of it?
Your discussion in the final part of the focus group will be audio-recorded and the data subsequently transcribed by either one of the two named researchers on this project. Any and all identifiers including names, locations etc. will be deleted from any subsequent report or published paper derived from these transcripts. The only personal information that will be collected is the demographic data outlined above. The purpose of collecting the data is to identify thresholds concepts in General Practice which can then be used to improve the teaching and learning of General Practice by Registrars (and possibly in undergraduate medical students too). This will be done using an analysis of the themes which arise from all the groups' discussions. The information will be written up into a report for the RNZCGP, and planned to be presented at a relevant conference, and also submitted as a paper for publication in a suitable medical journal. Every attempt will be made to preserve your anonymity. There will be no commercial use of the data.
Only Dr Hall and the Assistant Research Fellow will have access to the transcribed files which will be held securely in password protected files. The audiotapes, once transcribed, will be destroyed after the transcriptions have been checked for accuracy. The data collected will be securely stored in such a way that only those mentioned below will be able to gain access to it. Any personal information held about you such as your contact details will also be destroyed at the completion of the research. Anonymised data obtained as a result of the research will be retained for **at least 5 years** in secure storage.

Can Participants change their mind and withdraw from the project?
You may withdraw from the project, at any time before its completion and without any disadvantage to yourself.

What if Participants have any Questions?
If you have any questions about our project, either now or in the future, please feel free to contact either:

Dr Anna Chae	Dr Katherine Hall
Department of General Practice and Rural Health, Otago Medical School – Dunedin Campus	Department of General Practice and Rural Health, Otago Medical School – Dunedin Campus
Phone: 02102570110	Phone: 027 6640044
Email: a.chae@otago.ac.nz	Email: katherine.hall@otago.ac.nz

This study has been approved by the Department stated above. However, if you have any concerns about the ethical conduct of the research you may contact the University of Otago Human Ethics Committee through the Human Ethics Committee Administrator (phone: +643 479 8256 or email gary.witte@otago.ac.nz). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome. Reference number D20/445.

6.3 Consent Form

CONSENT FORM

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage. I know that:

1. My participation in the project is entirely voluntary;

2. I am free to withdraw from the project before its completion;

3. Personal identifying information i.e. audio-tapes will be destroyed at the conclusion of the project but any raw data on which the results of the project depend will be retained in secure storage for at least five years;

4. Participation will not affect my assessment or relationship with the Royal New Zealand College of General Practitioners. If I become discomforted by participating I am free to withdraw and that I will receive a follow-up phone call from the researchers within 72 hours to check I am OK.

5. I will not be receiving any reimbursement for my time, that I have been made aware that this research is being funded by the Royal New Zealand College of General Practitioners, and there will be no commercial use of the data.

6. The results of the project will be made available to the Royal New Zealand College of General Practitioners and may be published and/or presented at a conference but every attempt will be made to preserve my anonymity.

7. The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve my anonymity.

I agree to take part in this project.

....
(Signature of participant) (Date)

.....
(Printed Name)

This study has been approved by the Department stated above. However, if you have any concerns about the ethical conduct of the research you may contact the University of Otago Human Ethics Committee through the Human Ethics Committee Administrator (phone: +643 479 8256 or email gary.witte@otago.ac.nz). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome. Reference number D20/445.

6.4 Power Point Presentation

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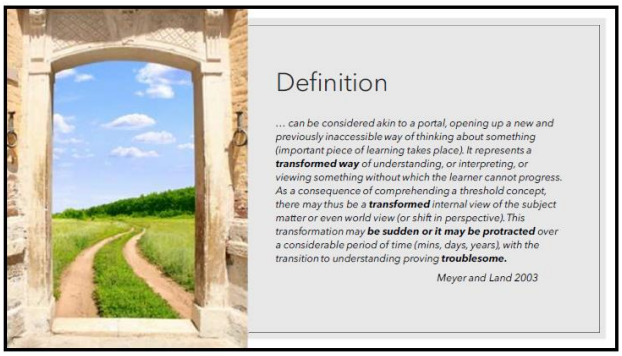

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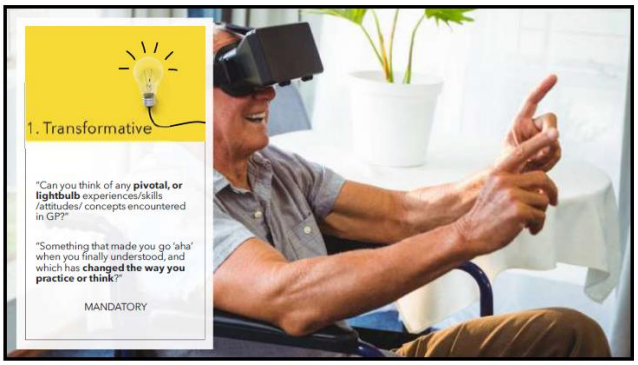

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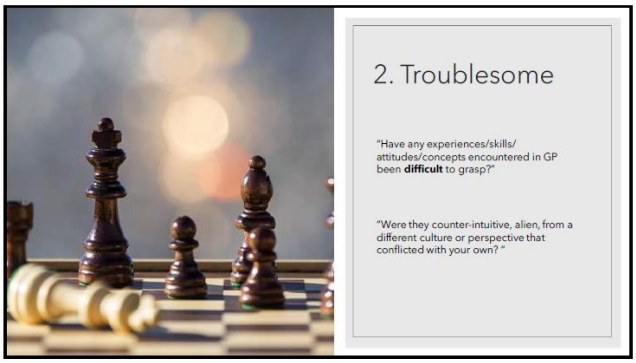

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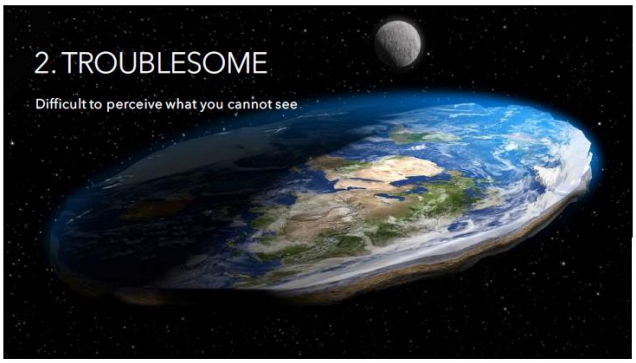

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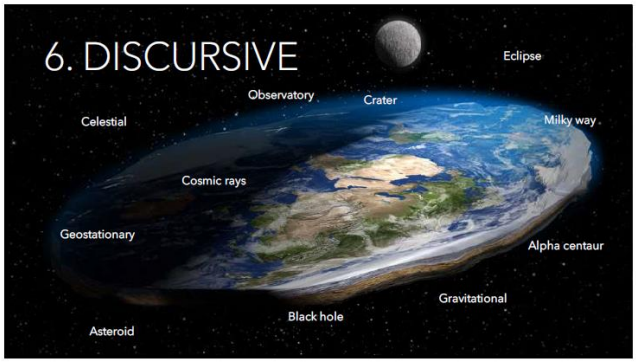

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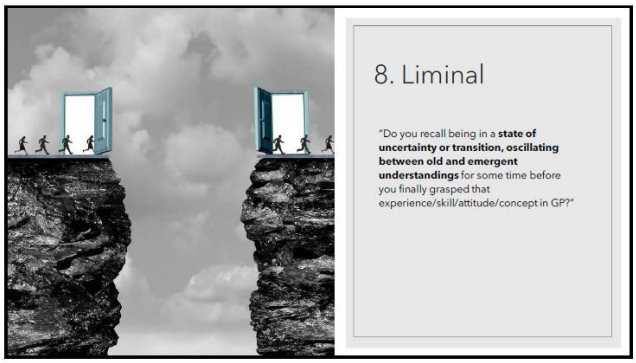

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6.5 Questions

Identifying TCs in being a general practitioner

In the context of the four domains (physical, mental & emotional, family & social & cultural, spiritual) of health and learning experiences;

1. Can you think of any pivotal, or lightbulb experiences/skills/attitudes/concepts encountered in GP? Something that made you go 'Aha!' when you finally understood, and which has changed the way you practice or think? (*Transformative*)
2. Were they difficult to grasp? (*Troublesome*)
3. Were you unable to return to prior ways of thinking or doing after realising any of these? (*Irreversible*)
4. Did they make you aware of the interrelatedness of a subject or gave you a sense of things 'coming together' or made you see links you couldn't before? (*Integrative*)
5. Did any of these delineate a particular aspect or topic? (*Bounded*)
6. Has there been an extension of your vocabulary? (*Discursive*)
7. Did any of those cause you to reconfigure or reconstruct prior knowledge in a different way? (*Reconstitutive*)
8. Do you recall being in a state of uncertainty or transition, oscillating between old and emergent understandings for some time before you finally understood? (*Liminal*)