Does an education intervention improve behavioural intent to screen for depression: A feasibility study

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A thesis submitted in partial fulfilment of the requirements for the Master of Osteopathy Programme.
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Declaration

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This Thesis/Dissertation/Research Project entitled: “Does an education intervention improve behavioural intent to screen for depression: A feasibility study” is submitted in partial fulfillment for the requirements for the Unitec degree of Master of Osteopathy

Principal Supervisor: Megan McEwen
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Candidate’s declaration

I confirm that:

This Thesis/Dissertation/Research Project represents my own work;

The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.

Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: 2018-1041

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Abstract

Background. Depression affects one in five New Zealanders and often goes without recognition, or effective treatment. Screening has the potential to improve detection of depression, however, screening for depression within New Zealand osteopathy is poorly implemented. Addressing the lack of knowledge with depression screening has been found to improve osteopaths’ detection of depression and referral for appropriate treatment. This study’s primary objectives were to determine if it was feasible that a behaviour change education intervention, using the Whooley questions, for depression screening could influence student osteopaths’ readiness to change, commitment and clinical behavioural intention within clinical practice. The study investigated student osteopaths’ perceptions and experiences of the behaviour change intervention, including the use of Whooley questions in a clinical setting.

Methods. This was a non-randomised prospective feasibility study which incorporated mixed methods to form two studies. The main quantitative study included a pre-post questionnaire survey of an education session on depression screening and post questionnaire survey of depression screening after six weeks of clinical practice. The second, supportive qualitative study was informed by interpretive description and thematic analysis.

Results. The quantitative data revealed significant gains in the osteopathic students’ clinical behaviour intentions to screen for depression as well as in their perceptions of willingness to change. Their belief in the need to change their screening behaviours and the benefits of such change also improved significantly. Spearman’s rho showed a significant positive correlation of large magnitude between students’ initial commitment to screen for depression in comparison to their final intention score to screen for depression, following six weeks of screening practice. Qualitative data suggested the education session encouraged positive behaviour change regarding the adoption of depression screening. The Whooley questions were found to be a useful screening tool, and patients who responded positively to the Whooley questions were able to be appropriately referred on. Finally, reminder screening cards were perceived to be a key tool for facilitating behaviour change and depression screening in a clinic setting.

Conclusion. Preliminary evidence demonstrates that a brief educational intervention designed to train student osteopaths in screening for depression could be feasible and may improve students’ readiness to change and commitment, and clinical behavioural intent within clinical practice. The education session was perceived to be relevant and informative for screening for depression. After six weeks of screening for depression, students felt they were able to appropriately screen patients with possible depression, and some did refer patients for an accurate diagnosis and treatment.

Key words. Depression screening, behaviour change, education, readiness to change, osteopathy
Preface to thesis

The aim of this thesis was to determine whether it is feasible that an educational behaviour change intervention can influence student osteopaths to screen for depression within clinical practice. The research was prompted by the findings of Sampath and Roy (2015, 2018) who investigated how New Zealand osteopaths identified, assessed and managed mood disorders. Within these studies, it was reported that osteopaths had insufficient education or lack of expertise to do so. This research continues the work begun by Sampath and Roy (2015, 2018) and looks to develop a pragmatic approach to resolve the lack of education and expertise regarding screening for mood disorders.

This research is presented in four main chapters. Chapter One presents a concise literature review to familiarise the reader with the relevant background material on depression in New Zealand. This literature review covers the epidemiology of depression, evidence-based screening and current practices for screening for depression. The literature review also covers relevant behaviour change and commitment theory, behaviour change measurements and interventions, as well as a brief section exploring the methodology employed to answer the research question.

The research itself is separated into two studies using quantitative and qualitative methods respectively. Chapter Two is the larger quantitative study and comprises the majority of the work of the research. It is a non-randomised prospective feasibility study, presented as a manuscript, and reports the participants’ readiness to change, commitment to screening for depression and their clinical behavioural intention (the degree to which they intend to change their clinical behaviour) following the intervention. Chapter Three is a second concurrent study intended only to add qualitative depth to the quantitative research findings. It is a prospective qualitative feasibility study, also presented as a manuscript, and reports the subjective impressions of student osteopaths’ participating in the study. Students provided feedback on the design and delivery of the intervention, as well as on the positive and negative aspects of their experience when applying the intervention in clinical practice. Chapter Four concludes the research by integrating both qualitative and quantitative findings, leaving the reader with a clear insight as to what this work adds to the body of literature and where future research should be positioned.
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Chapter One: Literature Review

This review looks to present the literature regarding readiness to change, programme commitment and clinical behavioural intention when adopting a new clinical behaviour of screening for depression. This review will firstly introduce the epidemiology of depression, evidence-based practice and current practices within New Zealand. The review then shifts its focus to consider evidence-based principles of behaviour change theories and effective implementation strategies to improve an individual's readiness to change, commitment and clinical intention towards depression screening in a tertiary education context.

Literature search: The literature on the subject was found using ScienceDirect, PEDro, SCOPUS, EBSCO Health Databases, MEDLINE, SPORTDiscus, and Unitec Institute of Technology-linked Google Scholar. Articles were identified using keywords and subject terms relating to depression, mood disorders, mental illness, screening, behaviour intervention, behaviour change theory, readiness to change, education and by hand-searching through reference lists of previously obtained articles.

Depression
Depression is defined as a Major Depressive Disorder (MDD) according to either the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) (American Psychiatric Association, 2013) or the International Classification of Diseases (ICD10) (World Health Organisation, 2016b). Depression is a serious mood disorder that presents primarily with a prolonged lowered mood which can be described as feeling ‘depressed, hopeless, sad, discouraged’, or “down in the dumps” (American Psychiatric Association, 2013, Diagnositic Features, Para 4). Depression can affect individuals of any age, ethnicity or social position (World Health Organisation, 2017a). Those with depression can also experience a reduction in energy and activity levels whereby the individual may also have lost interest or pleasure in nearly all activities. The experience of symptoms differs considerably between individuals. Symptoms can last for months and up to years with varying degrees of severity. The essential feature of MDD is that the individual has felt like this for most of the day, nearly every day, over a consecutive two-week period. Depression is often experienced concurrently with symptoms of anxiety (Tiller, 2013), cognitive difficulties (Marazziti, Consoli, Picchetti, Carlini, & Faravelli, 2010), somatic complaints, such as pain and fatigue (Chakraborty, Avasthi, Grover, & Kumar, 2010; Lecrubier, 2006) and, it can be secondary to medical comorbidities, including cancer, neurological impairment, arthritis and cardiovascular disease (O'Connor, Whitlock, Gaynes, & Beil, 2009). Depression can lead to social isolation, diminished work role functioning, secondary illness due to inactivity and poor quality of life (Bromet et al., 2011). Given the wide range of symptoms and situations in which depression can arise, it is likely that correct diagnosis may go undetected, especially since the patient may not arrive at the most appropriate provider. For example, it is unlikely a patient would visit a psychologist for pain symptoms, unless depression had been
detected earlier. It is far more likely that they would visit an osteopath as the patient themselves may not recognise their pain symptoms as having a psychological origin. Therefore, osteopaths and their patients would be well-served if they were able to screen for depression effectively.

**Epidemiology of Depression**

*Global Depression*

Mental illness is increasing worldwide, with depression being a significant contributor to the global burden of disease (World Health Organisation, 2017a). Depression affects nearly 350 million people across the world and the number of people living with depression continues to grow (World Health Organisation, 2017a). The World Mental Health Survey (2008), conducted in 17 countries, found that on average about 1 in 20 people self-reported having an episode of depression in the previous year (Von Korff, Scott, & Gureje, 2009). Globally, depression is currently ranked fourth in the burden of non-communicable disease, with costs exceeding US$1 trillion per annum (World Health Organisation, 2016a). By 2020, it is predicted that depression will have grown to become the second leading cause of global burden of disease behind ischemic heart disease (World Health Organisation, 1996).

*Depression in New Zealand*

About 47% of New Zealanders will experience depression at some point in their lives, with one in five (20.8%) adults self-identifying as having depression, at any time (Browne, Wells, Scott, McGee, & New Zealand Mental Health Survey Research Team., 2006). It has been over a decade since these statistics were gathered. If one in five were still true to the 4.9 million people living in New Zealand recorded in 2018, this would equate to nearly one million people annually experiencing depression (Statistics New Zealand, n.d.). Women are twice as likely as men to experience depression, especially between 35 and 44 years of age (Bromet et al., 2011; Health Navigator, 2017). Populations who are more vulnerable to depression in New Zealand include young people and adolescents, Māori and Pasifika, and those living in the most deprived areas or in isolation, especially within rural communities (New Zealand Guidelines Group, 2008). In 2014, the reported burden of mental health cost New Zealand’s economy a conservative $17 billion, not including indirect expenditures such as absenteeism and presenteeism (RANZCP, 2016). Early intervention and treatment could see this figure reduce by up to 20% (RANZCP, 2016).

**Depression and Suicide**

At its worst, depression can lead to suicide (May, Klonsky, & Klein, 2012; World Health Organisation, 2017a), with up to 70% of those attempting suicide having experienced a mood disorder (Beautrais, Joyce, & Mulder, 1998; Indu et al., 2017). Globally, close to 800,000 lives are lost to suicide every year,
which equates to 3,000 suicidal deaths daily (World Health Organisation, 2017b). For every person who commits suicide, 20 or more may attempt to end their life (Chesney, Goodwin, & Fazel, 2014; World Health Organisation, 2017b). Suicide is a major issue of concern for New Zealand as well, with over 600 people taking their lives each year (Mental Health Foundation of New Zealand, 2018). The highest rates of suicide in New Zealand are found in adults, especially Māori men whose suicide rates are 54% higher than non-Māori men (Ministry of Health, 2016). A UNICEF report found New Zealand had the highest teenage suicide rate compared to 41 Organisation for Economic Co-operation and Development (OECD) and European Union (EU) countries, with the suicide rate of girls increasing (UNICEF Office of Research, 2017). The rate in New Zealand was 15.6 per 100,000 people per year, compared to the top country in the list (Portugal) with a rate of 1.7 suicides per 100,000 per year. Suicide in New Zealand tends to occur within the most deprived and rural areas of the country (Ministry of Health, 2016). It is estimated that annual suicide costs increased from $1.3 billion in 2002 to more than $2 billion per annum in 2013 (Ministry of Health, 2017).

**Barriers to Identifying Depression**

*Identifying Depression within Healthcare*

The research into the epidemiology of mental health disorders in the New Zealand population is limited (Williams, Haarhoff, & Vertongen, 2017) and it has been suggested that in the past the true prevalence of depression within New Zealand was higher than estimated (Joyce, Oakley-Browne, Wells, Bushnell, & Hornblow, 1990). Identifying depression in New Zealand is complicated by the overarching stigma and discrimination mental health illnesses receive within society (Browne et al., 2006) and healthcare settings (Knaak, Mantler, & Szeto, 2017). This situation has led to reluctance for individuals to ask for help (Barney, Griffiths, & Banfield, 2011), which is said to contribute to a high level of undiagnosed mental health issues (Knaak et al., 2017). In New Zealand, many people who experience depression will often consult their general practitioner in the first instance, rather than mental health services (Williams, Haarhoff, & Vertongen, 2017). It has been found that up to 30-50% of primary care patients, who have depression with concurrent symptoms are likely to be missed by health professionals due to competing time. That is, the focus of most consultations are primarily on physical symptoms rather than ascertaining a psychological origin. From there, there are difficulties with resource constraints found within the primary healthcare sector. These difficulties may include insufficient training for general practitioners’ in assessment and treatment of mental health issues, as well as lack of time and inequity for funding of mental health services. (Simon & Vonkorff, 1995; Timonen & Liukkonen, 2008; Williams et al., 2017). These things are problematic for early intervention and treatment and could possibly be why many New Zealanders’ mental health conditions continue to go undetected and the prevalence of depression continues to rise.
Identification of Depression by New Zealand Osteopaths

Health professionals face a formidable challenge when considering the clinical management of depression. In a study undertaken by Sampath and Roy (2015), 216 New Zealand osteopaths were invited to participate in a survey which aimed to understand how mood disorders were being identified, assessed and managed in clinical practice. Of the sixty-two respondents, 11% (n=7/62) used specific and validated mental health screening tools such as, mood questionnaires, psychometric tests and ‘other tools’, whereas, 89% (n=55/62) did not. From this same study, of the seven osteopaths (11%) who used validated measures such as mood disorder questionnaires, held previous qualifications in mental health (Sampath & Roy, 2015). However, it was also reported that almost half (n=28) of the sixty-two respondents to the survey assessed mood disorders using unvalidated and biologically implausible osteopathic diagnostic processes such as tissue palpation and cranial rhythm as a proxy for an adequate detection tool. Other methods that were reportedly used to assess patients with mood disorders were equally questionable, including unreported and/or unvalidated testing procedures. For example, using what is described by Sampath and Roy (2015) as “body talk system (IBA Global Healing, 2017), decompression evaluation of the lumbar/sacral area and sub-occipital region, Fulford’s concept, kinesiology, neuro-links, observation and posture” (Sampath & Roy, 2015, p 164), were all reported as being used to assess clients with mood disorders. In another study by Sampath and Roy (2018), they reported the major barriers experienced by osteopaths to be competency requirements, boundaries of practice and lack of professional network. Under competency requirements, lack of expertise and knowledge led practitioners to believe they did not have sufficient education and that managing clients with mood disorders was outside of their scope. Furthermore, practitioners were apprehensive about the possible psychological issues that may arise. Lack of professional network for referring patients was reported by practitioners who felt unsure of whom to refer their clients to. Almost three-quarters of the respondents (73%) identified that education which specifically addresses early detection and management of mood disorders would be beneficial to their practice (Sampath & Roy, 2015, 2018). It was also suggested that if sufficient knowledge was gained for mood disorders, this could result in better referral to the appropriate professionals (Sampath & Roy, 2018), which is consistent with previous recommendations (Pincus, 2006).

Evidence-based Practice for Depression Screening

The detection of depression can be improved by training in depression and screening (Tylee & Walters, 2007). Screening is defined as the systematic application of a test to rule out those without a condition. Thus, screening for depression aims to improve the health and well-being of populations and individuals with depression (Mitchell & Coyne, 2010). The US Preventative Services Task Force (USPSTF) recommends screening all adults for depression as it improves the accurate identification of people with depression (Smithson & Pignone, 2017). For example, if patients are not screened, their depression will
go unrecognised and cannot be appropriately treated. Therefore, employing systematic routine screening into clinical practice has been advocated as a means of improving detection, treatment, and outcomes of depression (Pignone et al., 2002). Routine screening of all patients in the adult population may help clinicians identify missed cases of depression and help patients to obtain early intervention (O’Connor et al., 2009).

A large number of depression screening tools are commonly used in primary care. These include, but are not limited to, the Patient Health Questionnaire (PHQ-9) (Kroenke, Spitzer, & Williams, 2001) and the Patient Health Questionnaire-2 (PHQ-2) (Kroenke, Spitzer, & Williams, 2003), the Center for Epidemiologic Study Depression Scale (CES-D) (Radloff, 1977), the Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) and the Short Form-36 (SF-36) (Ware & Sherbourne, 1992) which has been modified into shorter versions such as SF-12 (Ware, Kosinski, & Keller, 1996) and SF-8 (Ware, Kosinski, Dewey, & Gandek, 2001). The above depression screening tools vary in their psychometric properties, with the PHQ-9 reported to be the most popular and evaluated tool (El-Den, Chen, Gan, Wong, & O’Reilly, 2018; Smithson & Pignone, 2017). However, the longer screening tools such as the PHQ-9 have been reported as too cumbersome, hard to score and too time-consuming for routine use by busy primary care practitioners (Andersen & Harthorn, 1989; Whooley, Avins, Miranda, & Browner, 1997). There is a trend towards developing short adaptations of depression screening tools such as the PHQ-2, a two-question form of the PHQ-9. A meta-analysis performed by Mitchell and Coyne (2007) revealed that using a brief two or three-item screening tool such as the self-reported PHQ-2 and the verbally delivered Whooley questions (Whooley et al., 1997) perform just as well as longer screening instruments.

The PHQ-2 is an ultra-short questionnaire (<2 mins), and demonstrates good clinical utility as a screening instrument for depression (sensitivity 89.3% and specificity 75.9%) (Smithson & Pignone, 2017). However, the PHQ-2 was not chosen for this study because it is not validated to be used as a verbal screening tool and given osteopaths verbally obtain their medical information from patients, the PHQ-2 would not have been a good suit to the typical osteopath assessment. Instead, the Whooley questions were chosen, which are identical to the PHQ-2 but differ in how they are delivered and ultimately validated. The PHQ-2 is validated only as a self-reported measure however the New Zealand Guidelines Group (2008) advocate the verbal delivery of the Whooley questions as a screening tool for depression in the general adult population (Arroll & Kerse, 2003; Whooley et al., 1997) and women in prenatal care (Darwin, McGowan, & Edozien, 2016). Therefore, the Whooley questions appear to be better-suited to osteopathic practice, and it is a validated verbal screening tool which can easily be included as part of the systemic question’s osteopaths obtain when taking a client history.

The Whooley questions were derived from the original Primary Care Evaluation of Mental Disorders (PRIME-MD) patient questionnaire (Spitzer et al., 1994). The PRIME-MD consists of a two-stages screen instrument which is used to recognise and diagnose four groups of mental disorders (mood,
anxiety, somatoform, and alcohol), in primary care patients. The Whooley questions consist of two verbal screening questions; “During the past month, have you been bothered by feeling down, depressed or hopeless? (Yes/No); During the past month, have you often been bothered by little interest or pleasure in doing things? (Yes/No) (Whooley et al., 1997).

A positive response to either or both of the Whooley questions is considered a positive screen (Bosanquet et al., 2015). Whilst the Whooley questions are not yet a well-known tool used for depression screening in clinical practice, a recent meta-analysis by Bosanquet et al. (2015) showed that it was an effective screening tool having a pooled high sensitivity (0.96) and a pooled modest specificity (0.61) in detecting depression. The Whooley questions have been used to screen for depression in primary care settings by general practitioner’s (GP) (Arroll, Goodyear-Smith, Kerse, Fishman, & Gunn, 2005; Arroll & Kerse, 2003; Lombardo et al., 2011), in hospital and outpatient settings (McManus, Pipkin, S, & Whooley, 2005; Whooley et al., 1997) and in community settings (Adachi et al., 2012; Suija et al., 2012). However, differences between self-administration and verbal delivery of the Whooley questions differ between validation studies. Self-reported Whooley questions report sensitivity (0.96) and specificity (0.57) in the original validation study by Whooley et al. (1997). Within the same study, the Whooley questions were simultaneously self-administered beside six other case-finding instruments within a sample of 536 in a predominant male population of American veterans (97%). In contrast, studies performed in New Zealand by Arroll and Kerse (2003) found that verbally-delivered Whooley questions had a slightly higher sensitivity (.97) and specificity (.67), which is a similar finding to that of Lombardo et al. (2011). It is difficult, given the small number of studies and variability in both settings and populations, to find consistency within the validation studies. The New Zealand study by Arroll and Kerse (2003), was set within a broader community setting across 15 general practices. Therefore, this study may have a better representation across both genders in comparison to the original study (Whooley et al., 1997), which only consisted of men. With screening being only one small but essential step in the bigger picture of management and referral of undiagnosed depression, the New Zealand study provided evidence of validity by asking the Whooley questions verbally. This is more likely a better fit than self-administered forms, given that the majority of osteopathic case history taking is gained verbally.

In 2005, a third ‘help’ question, “Is this something with which you would like help?” was included to be asked with the Whooley questions. The help question substantially improves the specificity of the Whooley questions to 0.85 when self-administered (Arroll, Goodyear-Smith, Kerse, Fishman, & Gunn, 2005). The same specificity of 0.85 was also found in a specific population of elderly patients, aged between 72-73 years of age within Finland (Suija et al., 2012). However, like Arroll et al., (2005), the Whooley questions and the help question were self-administered. Another study, also in written form, was found to have a much higher reported specificity of 0.94 (Mohd-Sidik, Arroll, Goodyear-Smith, & Zain, 2011), but this study differed due to both the Whooley questions and the help question being translated into Malaysian, making it difficult to compare to the English validation studies. Evidence for the validation
of verbally asking the ‘help’ question, has been found within the following two studies. The first study revealed a higher specificity of 0.88 when general practitioners asked the ‘help’ question in 937 Swiss patients, over the age of 18 years old (Lombardo et al., 2011). The second study verbally screened 280 Mexican women at two stages of their pregnancy; prenatal and six months post-partum. Prenatally the two Whooley questions revealed a high sensitivity of 94.7% and had a low specificity of 39.4%. However, when both the Whooley questions and the help question were asked, specificity increased to 90%. Six months post-partum, the two Whooley questions revealed sensitivity of 82.1% and specificity of 76.9%. When the help question was included once again, specificity increased to 85.7% (Navarrete, Nieto, Lara, & Lara, 2018). Therefore, it appears that available verbal and self-administered validation studies do suggest specificity of the Whooley questions is increased when using the ‘help’ questions, as reported by Bosanquet et al. (2015).

Adopting the Whooley questions and the third help question as an outcome measure within osteopathy clinical practice, could be a step towards a less haphazard approach that may improve the way osteopaths currently screen for depression. Regardless of being self-administered or verbally delivered, the Whooley and the help questions appear to be a well-validated outcome measure and given the nature of obtaining client history, this could be a useful tool that could easily be integrated into existing clinical practice.

**Behaviour Change**

*Behaviour Change Theory*

Being able to respond appropriately to new evidence is fundamental in being a competent healthcare provider (Grol & Grimshaw, 2003). Being able to change clinical behaviour is important in improving healthcare and patient health outcomes (French et al., 2012). Implementation of evidence-based practice (EBP) in healthcare however is variable (Eccles et al., 2009) due to the variety of organisational and individual factors influencing health practitioners’ behaviour (Cane, O’Connor, & Michie, 2012). Time constraints are identified as the greatest barrier to implementing EBP into practice and a reported lack of time appears to be a major issue across all health professions (Jette et al., 2003; Majid et al., 2011; McColl, Smith, White, & Field, 1998; Metcalfe et al., 2001). Other factors that are considered “individual factors” include an inability of health professionals to keep abreast of changes, clarity of roles and practice and perceived relevance to practice (McKenna, Ashton, & Keeney, 2004). These factors were also similar obstacles identified by the respondents in the osteopathic study by Sampath and Roy (2015). Organisational barriers are reported to be the lack of money, the lack of dissemination of evidenced-based guidelines within professions and, the culture of specific healthcare practices (McKenna et al., 2004; Mota da Silva, da Cunha Menezes Costa, Garcia, & Costa, 2015). Changing someone’s individual
behaviour is complex, but it is more effective if interventions are based on evidenced-based principles of behaviour change (Cane et al., 2012).

The problem with understanding why health professionals do or do not adopt a given behaviour is very similar in difficulty to finding out why anyone in general may not uptake certain behaviours, such as simple health-related habits such as starting exercise or dieting (Godin, Bélanger-Gravel, Eccles, & Grimshaw, 2008). Extensive research involving social cognitive psychological theories have enabled researchers to better-understand the theory behind a health professional’s behaviour (and intention) (Appleby, Roskell, & Daly, 2016). Theoretically-based social cognitive psychological models such as the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Theory of Planned Behaviour (TPB ) (Ajzen, 1991; Eccles, Grimshaw, Walker, Johnston, & Pitts, 2005), provide a reliable foundation for exploring reasoned behaviour and the attitudes and beliefs which influence an individual’s behaviour (Godin et al., 2008). The TPB was found to be an appropriate foundation in which to predict a clinician’s ability to change the way they clinically practice. This is because the TPB suggests that intention and behaviour are determined by an individual’s attitude, subjective norms such as normative beliefs and social pressure towards the behaviour (Ajzen, 1991; Armitage & Conner, 2001). For example, a clinician’s attitude towards a new behaviour may be informed by clinical research, their colleagues’ beliefs and their own personal beliefs regarding the new behaviour, prior to making a decision. In a systematic review by Appleby, Roskell and Daly (2016), they found that clinicians’ intentional behaviour is largely influenced by attitude, the utility and relevance of the guidelines within clinical practice, and social norms, that is the acceptance of using the guidelines between peers. For example, two main healthcare professions studied within behavioural literature are nurses and physicians (Appleby et al., 2016). Their intentions to comply with clinical guidelines were contextual. If the clinical setting allowed for easy integration of implementing clinical guidelines, then intentions were found to be better (Cummings, Hutchinson, Scott, Norton, & Estabrooks, 2010; Kortteisto, Kaila, Komulainen, Mäntyranta, & Rissanen, 2010; Rycroft-Malone, Fontenla, Seers, & Bick, 2009; Schultz & Kitson, 2010). This suggests when implementing clinical guidelines, pragmatism is an important driver and can outweigh the best intentions and not one implementation strategy will fit in all situations. Therefore, it is suggested that different strategies need to be in place and should be targeted to the specific health professionals when new clinical guidelines are being introduced (Appleby et al., 2016).

When clinical guidelines are perceived to have relevancy to peers within clinical practice, intentions can also be improved. Both nurses and medical doctors have been found to use clinical guidelines when there is professional agreement, which signifies that normative beliefs can be associated with the social pressures to use guidelines (Beatty & Beatty, 2004; Bonetti et al., 2010; Buenestado et al., 2013; Jenner, Watson, Miller, Jones, & Scott, 2002). This suggests that when implementing any new information into a clinical practice, the information should be easy and relevant to use within the clinical setting, but also acceptable to those who will use it. Kortteisto, Kaila, Komulainen, Mäntyranta, and Rissanen (2010)
report barriers to implementation such as lack of awareness of the clinical guidelines, agreement with the guidelines, self-efficacy of performing the guidelines, and inertia of previous practice. These were similar to the obstacles identified by the respondents in the osteopathic study by Sampath and Roy (2015). Another obstacle found in established healthcare, are practice habits, which can be facilitative or act as a hindrance when new information is introduced (Maue, Segal, Kimberlin, & Lipowski, 2004). Therefore, healthcare practices, such as osteopathy, may not take up clinical guidelines given they have their own way of conducting clinical practice, regardless of if the clinical guidelines improve patient outcomes. Recently, Figg-Latham and Rajendran (2017) found this to be the case with osteopaths rejecting non-specific back pain guidelines. Figg-Latham & Rajendran (2017) report osteopaths have a strong identity fostered by their education, and felt clinical guidelines were seen as a threat to their profession and were only performed if they were contractually obligated. Thus, it could be suggested that when introducing a new clinical guideline that they are taught within a learning institution as this may help to promote the correct habits and its associations early. This may include such things as simply being aware of the clinical guidelines and understanding their foundations and how they were developed. Furthermore, having new clinical guidelines being introduced within a learning environment will enable students to develop their confidence in performing the guidelines under supervision and, this would then more likely continue with them into professional practice. All of these factors could potentially be changed with an education strategy (Kortteisto, Kaila, Komulainen, Mäntyraanta, & Rissanen, 2010).

Measuring Behaviour Change

Success in bringing about change can be heavily influenced by an individual’s readiness to change and level of commitment to a given programme or initiative (Holt, Armenakis, Feild, & Harris, 2007). It was reported that individuals who show high levels of commitment and readiness to change demonstrate enthusiasm, become more involved, will continue even when faced with programme difficulties and are more inclined to be personally responsible for the success of the programme (Lizar, Mangundjaya, & Rachmawan, 2015). There seems to be an apparent scarcity of tools to evaluate an individual’s readiness to change, however, a questionnaire that has been regularly cited includes the Programme Commitment Questionnaire as utilised by Neubert and Cady (2001). The Programme Commitment Questionnaire (PCQ) (Neubert & Cady, 2001), was adapted from the original self-reported Goal Commitment Measure validated by Hollenbeck, O’Leary, Klein, and Wright (1989). In a validation study by Hollenbeck et al. (1989), the goal commitment measure consisted of nine item questions such as, ‘force to attain a goal’, which relates to the individual’s motivation to attain a goal, ‘self-set goal-assign-goal discrepancy’, whereby discrepancy between self-set and assigned goals is used as a measure of commitment, and finally, ‘actual goal change’, which incorporates unwillingness or abandonment of the goal. Construct validation for the goal commitment measured 0.71 internal consistency estimate for reliability.
The PCQ is a brief, six-item questionnaire used to determine an individual’s readiness to change. Four of the six questions focus on the commitment and willingness towards adopting a particular behaviour, and the two remaining questions account for the perceptions of the need for that particular behaviour and its benefits (Neubert & Cady, 2001). The PCQ is scored using a Likert Scale, whereby respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale. Thus, the range captures the intensity of their feelings for a given item. Neubert and Cady (2001) performed two studies using the PCQ. In their first longitudinal study, they examined the relationship between programme commitment and individual’s participation and performance. The study established that there was a practical significance of programme commitment with participation and performance (<0.01). In the second study, Neubert and Cady (2001) went a step further to understand what explains programme commitment and what could be done to increase commitment to specific programmes, alongside other antecedents such as compliance perceptions (rewards, leader behaviour and co-worker behaviour) and affective perceptions (organisational commitment, change efficacy, and teamwork orientation). The PCQ was used to assess commitment to the continuous quality improvement initiative. The study established that the three affective perceptions and only one compliance perception (co-worker behaviour) is orientated with programme commitment. This strong relationship between the affective perceptions and co-worker behaviour indicates that initial programme commitment is the strongest predictor of subsequent commitment and emphasis is placed on the importance of gaining commitment early in the programme (Neubert & Cady, 2001).

While it is important to determine a practitioner’s readiness to change, it is also extremely beneficial to assess their beliefs surrounding how probable it is that they will change. Given that most health care is delivered in the context between a health professional and a patient (French et al., 2012), modifying health practitioners’ clinical behaviour and intention in response to clinical guidelines through the use of an intervention, is important. This will not only reduce the gap between practice and evidence in healthcare but will ultimately lead to an improvement in the quality of care patients receive (Cane et al., 2012; French et al., 2012). A recent addition to behavioural research is an outcome measure called the Continuing Professional Development (CPD)-Reaction Questionnaire, which has been well received by CPD stakeholders, however to date does not appear to have been used in behaviour change studies. The CPD-Reaction Questionnaire evaluates the impact of health professionals’ clinical behavioural intention and commitment to post CPD activities (Légaré et al., 2014). The CPD-Reaction Questionnaire has been reported to be a relevant and helpful tool in evaluating the impact CPD training has on health professionals clinical behavioural intentions (Légaré et al., 2017). The CPD-Reaction Questionnaire is a brief 12-item questionnaire assessing five constructs - intention, social influence, beliefs about capabilities, morals and beliefs about consequences which explains an individual’s intentions for performing those behaviours (Légaré et al., 2014). This instrument has shown adequate validity and reliability, with Cronbach’s coefficients for the constructs between 0.77 to 0.85 as a proxy for intentional behaviour (Légaré et al., 2017). The CPD-Reaction Questionnaire has been used to detect practitioner’s
intention of commitment prior to and after an intervention. An evaluation of the CPD-Reaction Questionnaire responsiveness to change in behavioural intention and verification of acceptability was conducted in a prospective mixed methods study by the developers of the questionnaire, Légaré et al., (2017). The study involved 376 health professionals, who were mostly physicians (62%) who were asked to complete the CPD-Reaction Questionnaire before and after attending a live continuing professional development activity. At the three months follow up, participants were asked to self-report any behaviour change. The results showed that between pre-CPD and post-CPD activity, there was an observed increase in intention-related scores for all constructs (<0.001), with the most appreciable increase for the construct ‘belief about capabilities. Of the 69 participants who responded at the 3-month follow up, 49 self-reported a behaviour change. The authors concluded, the CPD-Reaction Questionnaire was an appropriate brief and valid tool, able to detect a change in the behavioural intention of health professionals attending CPD activities.

Behaviour Change Interventions

Transferring evidence into practice through well-designed interventions have been stated to positively affect change (Flodgren et al., 2010, 2011; Zwarenstein, Goldman, & Reeves, 2009). Frequently used behaviour change interventions have included educational strategies, audit and feedback, use of reminders and computers through provider prompts and decision support, multi-professional collaborations, mass-media campaigns, and a combination of interventions (Grol & Grimshaw, 2003). When looking at behaviour change interventions, the plausibility, feasibility and the efficacy of delivering behaviour change interventions are also important characteristics to consider (Eccles, Grimshaw, Walker, Johnston, & Pitts, 2005). Thus, with so much diversity involved with behaviour change, it is impossible to have one behaviour change intervention that is suitable to address all changes in all settings (Grol & Grimshaw, 2003).

According to a Cochrane systematic review, if an intervention can address barriers that have been previously identified, it is more likely to improve professional practice in comparison to no intervention, dissemination of guidelines or educational materials (Baker et al., 2010). For example, the studies conducted by Sampath and Roy (2015, 2018), identified the main barriers to be a lack of education and expertise regarding mood disorders. Therefore, if an intervention addressed the barriers of inadequate education regarding mental health, it is likely to improve professional practice of osteopaths when encountering mood disorders. Evidence gathered by another systematic review (Chauhan et al., 2017) demonstrated that effective educational interventions for professional development would help to improve a clinician’s knowledge and skills. Furthermore, multifaceted interventions which included several components such as face-to-face learning, reminder systems, and pamphlets reported improvement in implementing guidelines into clinical practice, and detection of pathologies (Chauhan et al., 2017). Providing education through printed materials or lecture-only courses alone, does not contribute to
behaviour change (Cervero & Gaines, 2015). Instead, educational interventions need to move beyond simply communicating or disseminating information and incorporate a variety of strategies that enable or reinforce behaviour change (Davis et al., 1999; Grol & Grimshaw, 2003). In a systematic review by Mostofian, Ruban, Simunovic, and Bhandari (2015), provision of active approaches to change professional performance, was suggested to be much better than the traditional passive methods, such as didactic teaching. This is because didactic teaching has minimal participation or discussion, which is said to not be conducive to behaviour change (Grol & Grimshaw, 2003). Multifaceted approaches (i.e. an intervention with two or more components) that addressed the gap between current and best screening practice, such as reminder systems, lectures, and printed educational materials such as pamphlets, were reported to improve implementation of guidelines and professional practice (Chauhan et al., 2017). Fleet, Chen, Martin and Ernst (2014) conducted a pre/post intervention design to help doctors identify delirium in patients. This study used a multifaceted approach, which included a single one-hour teaching session, dissemination of updated clinical guidelines, and an innovative reminder system whereby clinical guidelines were adapted to A7 sized cards and A3 posters. A7 cards were distributed to junior doctors, teaching sessions held, and computer screen savers were also displayed. By using a multifaceted approach, delirium recognition and knowledge of pharmacological management improved. The study also reported that using the A7 cards was an innovative way to re-enforce and promote knowledge towards identifying salient aspects of the delirium guidelines. Furthermore, the A7 reminder cards were highly popular and were reported to be not only successful but also cost effective.

Methodology

Following thorough investigations into the most appropriate way in which to study behaviour change, commitment and clinical behavioural intention, the evidence has frequently justified the use of mixed-method approaches, as interventions that work in one setting will not necessarily work in another. Therefore, using a mixed method approach aims to enhance and strengthen the understanding of what supports observed behaviour changes, for example, by including an evaluation of a qualitative approach within a quantitative study design (Craig et al., 2013). For this reason, this current study implemented a large quantitative research study and a small separate supporting qualitative research study. These two studies aimed to identify both the feasibility and appropriateness of implementing an educational intervention to improve depression screening in a student clinical practice. The first quantitative study employed the strengths of quantitative methodology to measure readiness to change, commitment and clinical intention towards implementing a new clinical behaviour into clinical practice. The second, smaller qualitative study used the strengths of qualitative methodology to understand experiences and perceptions of adopting a new clinical behaviour into clinical practice. Essentially, combining the feasibility data from these two traditions provided a fully contextualised approach (Castro, Kellison, Boyd, & Kopak, 2010), and provided an appropriate research design framework to evaluate and explore the readiness to change and commitment to screening for depression in a clinical setting.
Feasibility

Within osteopathy research, pragmatic approaches to design studies are commonly performed to investigate whether or not an intervention works when in normal practice (Vogel & Draper-Rodi, 2017). The advantage of pragmatic studies is that they provide a greater applicability to real-world settings, as they do not reduce or strongly control all the variables associated with the intervention, rather they lead to a more applied or naturalistic design (Vogel & Draper-Rodi, 2017). To capture the pragmatism of whether a behaviour change intervention is applicable in the clinical setting, this study utilised a prospective feasibility study. Feasibility studies are used quite broadly to describe preliminary studies which may include pilot studies, feasibility studies, small sample size studies or pilot randomized controlled trials (Bowen et al., 2009; Vogel & Draper-Rodi, 2017). Often these studies are interchangeable with their respective names within the literature, as they all share commonalities when there is uncertainty regarding the feasibility for a future randomised controlled trial (RCT) (Vogel & Draper-Rodi, 2017). However each study has their own specific definition, aims and approaches (Vogel & Draper-Rodi, 2017). According to the hierarchy of evidence, systematic reviews and meta-analysis including RCTs are renowned for being the governing research design (Koes, 2004; Rosner, 2012). Weaker study designs are positioned at the bottom, which include basic science and case series and in the middle are case-control and cohort studies (Koes, 2004). RCTs were initially designed for pharmacological interventions which determine cause and effect (Page, 2012) and are reported to be limited in their applicability to manual therapy, as they often do not reflect the clinical situation phenomena, nor the patients seen in clinical practice (Koes, 2004) - consequently, not enough evidence is available to draw conclusions from them (Rosner, 2012). There are many areas for feasibility studies to focus on such as “acceptability” which includes the implementation of an intervention by those who are involved. The “demand” for a feasibility study, which can include the collection of data to discover whether the intervention is needed. “Implementation” feasibility studies refer to how likely the study can be fully implemented as planned or proposed, which is often uncontrolled. “Practicality” studies test the resources, time, commitment or, a combination, especially if constrained. “Adaptation” studies focus on changing procedures or modifying content within a new situation. “Integration” feasibility studies focus on assessing what level to place the new programme or process into existing practices. Finally, “limited-efficacy” testing focuses on testing an intervention in a limited way such as assessing intermediate outcomes rather than final outcomes or having shorter follow-ups (Bowen et al., 2009; Vogel & Draper-Rodi, 2017). This feasibility study focused on both acceptability and implementation as an initial step in exploring whether implementing a new behaviour change into clinical practice could help to inform the feasibility and acceptability of a larger study (Whitehead, Sully, & Campbell, 2014). According to Bowen et al. (2009), when developing an intervention, the main question is “Can it work?”, then, if there is evidence that an intervention might work, the next question to be answered is “Does it work”? whereby, the intervention is placed into ideal or actual conditions. Finally, if there is evidence that the intervention is effective and provides efficacy, then the question, “Will it work?”, is asked, whereby the intervention is applied to various contexts, and settings
that might translate into practice. This study took the suggestions of practicing osteopaths from Sampath and Roy’s (2015, 2018) studies, that education in the form of either a post-graduate or continuing professional development (CPD) course were required to address the barriers towards identifying, assessing and managing mood disorders within clinical practice. Given there has been no research completed in the area of depression screening in osteopathic practice, the question of ‘Can it work?’ (Bowen et al., 2009) seemed the most appropriate start and therefore addressed prospectively via a cohort study.

**Cohort Study**

Cohort studies have less weight than RCTs but are more feasible in situations where it is not practical for the research to be conducted. This could include either logistical or financial difficulties such as funding or scarcity of resources (Jakobsen & Gluud, 2013), which is consistent with previous comments of osteopathic research (Vogel & Draper-Rodi, 2017). Cohort studies involve a particular group of individuals (Bowen et al., 2009; Song & Chung, 2010), especially those who have specific knowledge or experience (Allen, 2017). Typically, cohort studies compare two groups, however due to both financial and logistical restraints, this study used convenience sampling drawn from a student population currently enrolled in a Masters of Osteopathy programme. Convenience sampling, is a non-random approach whereby participants meet certain practical criteria such as being easily accessible, in close proximity and have a willingness to participate (Etikan, Musa, & Alkassim, 2016). In addition to the practical criteria, the participants also have specific knowledge or experience which is judged to be of interest (Crookes & Davies, 1998). With regards to this study, participants were osteopaths undergoing clinical practice, which is similar to how qualified osteopaths’ practice. In addition to the group population, cohort studies can provide a temporal framework for researchers to establish cause and effect of the intervention (Song & Chung, 2010), therefore exposure to the education session and utilising depression screening in practice could be followed, in order to see where change occurred. Other advantages of using cohort studies is that they are very time-and cost-effective with respect to testing whether an intervention can work (Bowen et al., 2009). Furthermore, recall bias is minimised (Morrow, 2010), as participants are asked for feedback straightaway, rather than relying on past exposure. Cohort studies are also useful in investigating multiple outcomes (Morrow, 2010). For example, when providing a behaviour change intervention, a cohort study would have the ability to look at not only the behaviour change components such as readiness to change, commitment to depression screening and behavioural clinical intentions but also perceptions and experiences towards the education session and adopting screening for depression during clinical practice. However, the disadvantages of cohort studies are selection bias (Morrow, 2010), thus using a student population limits external validity to perhaps practising osteopaths, who practise outside of the learning environment. Also, confounders may arise over the course of the intervention (Morrow, 2010), especially with a student cohort, as other aspects of clinical practice may take precedence such as exams or assignments, potentially influencing the commitment to the study. In the
event of potential unforeseen confounders affecting actual change, these factors may be difficult to quantify, therefore perspectives provided by qualitative methodology could be used as a proxy to show effectiveness (Dolcourt, 2000). Another potential disadvantage to cohort studies is the loss to follow-up, however this typically occurs with prospective studies that are very long (over a year) (Morrow, 2010). To mitigate participants dropping out of the study, shorter time frames can be favourable therefore a six-week timeframe was employed in this study. Thus, despite the potential downfalls of cohort studies, it was deemed most appropriate to use a feasibility study while employing the aforementioned solutions to minimise the potential threats to any confounding variables, which may have in turn have prevented discovering if a behaviour change intervention could work within a student cohort. Using this approach will more likely help to determine if this study could be tested in a larger-scale definitive trial and go on to answer the next question of ‘Does it work?’ (Bowen et al., 2009).

Quantitative Study Methodology

Quantitative methodology was used as it aims to explore numerical data in a descriptive approach. Two questionnaires were used – the Programme Commitment Questionnaire (PCQ) (Appendix H) and Continuing Programme Development (CPD) Reaction Questionnaire (Appendix I) because they are an effective way of gathering descriptive statistical information. Furthermore, the majority of behavioural change outcome measures were found to be designed around specific behaviour change topics, so there is wider utility with these two outcome measures which have been designed for generic purposes. To understand the success of behaviour change, the PCQ was used to gain information on readiness to change and commitment from the participants towards screening for depression. Thus, assessing participants readiness to change and commitment at the start, prior to the education session and after the six weeks of clinical practice in the Post-Clinical questionnaire, provided insight into whether having a high commitment towards screening for depression resulted in participants actually screening for depression. As the study used an education session, similar to a continuing professional development training programme, it was deemed appropriate to use the CPD-Reaction Questionnaire to understand if the new knowledge was able to be transmitted in ways that enabled the participants to not only be able to learn about screening for depression and referral pathways, but to also change their clinical behaviour to incorporate screening for depression in clinic. Therefore, ultimately identifying patients who have undiagnosed depression, and referring for early intervention and treatment.

Qualitative Study Methodology

A small qualitative methodology was also chosen to support the quantitative findings. This aspect of the study was used to explore the underlying motives of behaviour change more directly. Semi-structured questionnaires were included to allow the participants a certain degree of freedom to explain their perceptions and experiences of the educational session, six-weeks of screening for depression within clinical practice and the utility of reminders. The inclusion of the semi-structured questionnaire was an important element to the research given the unchartered territory of implementing a new clinical tool that
was to encourage behavioural change regarding mental health detection in clinical practice. Thus, with no outcome measure specifically designed to measure and analyse behaviour change within the mental health field, this limited the ability to understand any real-life barriers of implementing depression screening into clinical practice. Furthermore, the qualitative aspect aided the feasibility and acceptability of behaviour change in a clinical setting. By obtaining participants’ feedback, this part of the current study allowed for exploration regarding why screening for depression during clinical practice may (or may not) have worked and highlighted if and where this was the case.

Summary
Statistically, depression, which has a close association to the high suicide rate in New Zealand, continues to rise. Osteopaths, being primary healthcare providers, can be the first port of call to address a patient’s pain and discomfort and there is evidence that confirms osteopaths often encounter patients with mood disorders such as depression. However, the major barrier to providing the appropriate care for patients who may also have undiagnosed depression, is lack of education and expertise. Therefore, in order to help osteopaths identify depression within clinical practice in accordance with clinical guidelines and improve patient care, this study will look at how feasible it is, and also the effects of, implementing an educational behavioural change intervention regarding screening for depression.
References


Note: The manuscript presented here is intended for submission to the International Journal of Osteopathic Medicine (IJOM) but rather than the referencing style specified in the IJOM guidelines for authors, the referencing style follows the American Psychological Association (“APA”). Elsevier’s initiative ‘Your Paper, Your Way’ (www.elsevier.com/yourpaperyourway) now permits manuscripts submitted using other referencing formats and APA was selected because it is easier to follow authors’ names in the text. Furthermore, there are minor deviations in reporting standards, such as word-count, to ensure the requirements of this 90-credit thesis are satisfied. Consistent with the recent IJOM initiative to adhere to standards for reporting being adopted in the rehabilitation literature (Chan, Heinemann, & Roberts, 2014), the manuscript is also informed by the CONSORT checklist for pilot and feasibility studies (Appendix M).
The effect of a behaviour change intervention to improve depression screening by student osteopaths: A feasibility study.

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Abstract

Background. Depression affects one in five New Zealanders and often goes unrecognised which can prevent access to effective treatment. Screening has the potential to improve detection of depression, however, screening for depression within New Zealand osteopathy is poorly implemented. A recent study found that addressing the lack of knowledge regarding depression screening could improve osteopaths’ detection of depression and referral for appropriate treatment. This quantitative study looks at understanding participants’ readiness to change, commitment and clinical behavioural intention towards screening for depression by adopting the Whooley questions in clinical practice.

Objective. To assess whether it is feasible that a one-hour education session on depression screening influences participants' readiness to change, commitment and clinical intention, and achieves depression screening over six-weeks of clinical practice.

Methods. This quantitative study is part of a feasibility study, informed by interpretive description and thematic analysis of data. Convenience sampling of 26 osteopathic students was employed. Prior to the education session, readiness to change, commitment and clinical intention were measured via an online self-reported survey consisting of the Programme Commitment Questionnaire (PCQ) and Continuing Programme Development (CPD)-Reaction Questionnaire. Participants received a one-hour education session on depression screening using the Whooley questions. At the end of the education session, the CPD-Reaction Questionnaire ascertained participants’ clinical intention to screen for depression. Participants were asked to screen for depression during clinical practice for six weeks. At the six-week follow up, participants completed the PCQ and CPD-Reaction Questionnaires.

Results. The CPD-Reaction Questionnaire showed significant changes to participants’ clinical intention scores for all constructs (p <0.001) with large effect sizes (.51-.79). PCQ median scores show significance changes in perceptions of willingness, need and benefits (p <0.05) for depression screening. Spearman’s rho showed a significant positive correlation of large magnitude (.59-.64) between participants’ initial commitment to screen for depression and resulting intention to screen for depression at the end of six weeks.

Conclusion. Preliminary evidence demonstrates that a brief educational intervention designed to train participants in screening for depression could be feasible and may improve participants’ readiness to change and commitment, and clinical behavioural intent within clinical practice.

Key words. Depression screening, behaviour change, readiness to change, education, osteopathy
Introduction

Research conducted by Sampath and Roy (2015) revealed that New Zealand osteopaths often encounter patients with mood disorders such as depression. Of those who responded, 48% (n = 30) stated they have difficulty in identifying patients with mood disorders due to insufficient education or lack of expertise (Sampath & Roy, 2015). Interestingly however, 27% (n = 17) did not believe there was a need to identify mood disorders (Sampath & Roy, 2015), to which Sampath and Roy (2017), revealed in their qualitative work, that osteopaths thought it was not within their role. The Ministry of Health depression guidelines advocate for routine screening of depression to help identify depression in the adult population (New Zealand Guidelines Group, 2008). Furthermore, screening has the potential to reduce depression occurrence by up to 20%, if detected and treated early (RANZCP, 2016). However, according to the clinical guidelines, accurate detection requires healthcare practitioners to have a high index of awareness regarding depression, to know what the risk factors for depression are, and also to have access to an appropriate referral process (New Zealand Guidelines Group, 2008). Given the difficulty of understanding depression in patients, respondents within the Sampath and Roy (2015) study advocated the need for education that specifically addresses early detection and how to refer when a potential mood disorder is suspected.

Adopting new knowledge for identifying depression into clinical practice requires changing clinical behaviour, which is highly dependent on a health professionals’ readiness to change and their commitment to implementing a new practice (Holt, Armenakis, Feild, & Harris, 2007). An in-depth search did not yield any quantitative data into behavioural change, commitment and clinical behaviour intention in osteopaths who do screen for depression. Therefore, this preliminary study is the first of its type to implement and investigate osteopath students’ readiness to change and commitment to a new behaviour, and clinical behavioural intention of screening for depression within clinical practice. The study explored whether it was feasible for a one-hour education session on depression screening to influence behaviour change in a group of student osteopaths. The specific objectives of this quantitative feasibility study are as follows:

1. To implement an educational intervention that will aim to improve depression screening behaviour in student osteopaths using the screening instrument the Whooley questions in clinical practice (Appendix G).
2. To measure readiness to change and commitment to screening for depression by student osteopaths, post-educational behaviour change intervention using the Programme Commitment Questionnaire (PCQ) (Appendix H).
3. To measure clinical behavioural intention of student osteopaths adopting the Whooley questions into clinical practice using the CPD-Reaction Questionnaire (Appendix I).
4. To provide a basis for future research to establish potential effectiveness of a behaviour change intervention on screening for depression in the osteopathic community.
Methods
This section describes participant recruitment, intervention and then explores the exact methods, data collection and data analysis used.

Design
The research design was a non-randomised prospective feasibility study which included a pre-post questionnaire survey of the education session on depression screening and post questionnaire survey of depression screening over six weeks of clinical practice. The questionnaire survey used two validated scales, the first measured participants’ readiness to change and commitment to new behaviour and, the second measured clinical intention towards depression screening. A full overview of the study procedures, for the purpose of thesis submission, can be found in Appendix J.

Participants
Recruitment. Ethics approval for the study was obtained from the Unitec Institute of Technology Research Ethics Committee (2018-1041) (Appendix A). In order to detect a medium-large effect, using the paired sample t-tests, with a 5% significance level (α = 0.05) with power 80% (β=0.2), the required sample size was approximately 24 (n=24). Twenty-six student osteopaths were recruited through convenience sampling. All students were undertaking a Masters of Osteopathy programme, currently completing 1000 hours of clinical practice in a tertiary teaching clinic in New Zealand.

Eligibility Criteria. In order to be included in this study, participants were required to satisfy the following criteria: Have current enrolment in the clinical training component of Master of Osteopathy programme. Participants were not eligible to participate if they were not enrolled. Participants were offered the opportunity to withdraw their data from the study up to five working days after the final data collection.

Setting and Location. The study was conducted within an osteopathic student-led clinic in New Zealand.

Consent. The study was explained to the participants by the researcher at the beginning of each session. Each participant was given a participant information form (Appendix B), to read and discuss. Following this, informed consent was obtained from each participant (Appendix C), prior to the commencement of data collection.

Intervention. A single, one-hour depression screening information session (Appendix D) for participants was provided by the researcher within scheduled class time. The education session was delivered twice in the same week. The first education session was presented to the first-year Master participants, two days later the second education session was presented to the second-year Master participants. In order to ensure delivery of information between the two presentations was consistent, the principal researcher conducted three pilot iterations of the education session for the co-researchers before presenting the education session to the participants. Education sessions presented to the
participants were sound recorded to ensure consistency of information and to capture any questions that may have differed between the first and second education sessions. Participants were informed of any questions that were asked in the first session, that were not discussed in the second session and any questions asked in the second session were emailed to the participants in the first group. The information for the education session was obtained from a combination of sources including the New Zealand Guidelines Group (Ministry of Health, 2008), Screening for Depression in Adults (U.S. Preventive Services Task Force et al., 2009), clinical practice guidelines for mood disorders (Malhi et al., 2015) and from talking with a panel of experts within the mental health field. Both supervisors for this research project were clinically experienced and academically trained in mental health.

Prior to the delivery of the education session, participants were invited to complete the online pre-education survey via an online platform, Survey Monkey™ (SurveyMonkey, Palo Alto, CA, USA). This consisted of demographic data and both the PCQ and CPD-Reaction Questionnaire. On completion of the education session, participants were invited to repeat the online post-education survey which consisted of the CPD-Reaction Questionnaire and qualitative feedback of the education session which is reported elsewhere. Prior to leaving the education session each participant was given an A7 card which detailed on the front the Whooley questions and on the back were important helpline and online resources for depression and suicide. A3 posters were placed within the participants’ resource and kitchen area, away from the public, to encourage participants to ask the Whooley questions during their six-week clinical practice. Screen-savers were also loaded onto the reception computers as reminders. A copy of these resources can be found in Appendix F.

For the following six weeks, participants were asked to routinely screen patients for depression using the Whooley questions (Whooley et al, 2007) and the help question (Arroll et al, 2005) within their designated clinical rosters. For the purpose of the current study, and for the remainder of the thesis, the “Whooley questions” will refer to the application of questions both one and two as well as the additional help question, as you can find below:

1. During the past month, have you been bothered by feeling down, depressed or hopeless?

and

2. During the past month, have you been bothered by little interest or pleasure in doing things?

and

3. Is this something you would like help with?

If participants were met with a positive response to one or more of the Whooley questions asked, participants were required to refer the patient to a general practitioner (GP) for further assessment. Participants provided patients with depression helpline and online resources if the participant thought it beneficial.
At the end of the six weeks clinical practice, participants were invited to complete an online Post-Clinical Questionnaire which included a repeat of the PCQ and the CPD-Reaction Questionnaire.

**Outcome Measures.** The outcome measures used to determine one’s readiness for change and commitment to depression screening were the Programme Commitment Questionnaire (PCQ) (Appendix H) and the Continuing Professional Development (CPD)-Reaction Questionnaire (Appendix I). The PCQ is a six-item questionnaire. It assesses an individual’s readiness to change by surveying commitment and willingness towards adopting a particular behaviour and perceptions of the need for that particular behaviour and its benefits (Neubert & Cady, 2001). The CPD-Reaction Questionnaire is a 12-item questionnaire which measures clinical behavioural intent by assessing intention, social influence, beliefs about capabilities, moral norms and beliefs about consequences in individuals (Légaré et al., 2017).

**Data Collection and Analysis**

All questionnaire responses were transcribed to Microsoft Excel (Excel 2010, Microsoft Corporation, USA) spreadsheets. To investigate the assumptions of normality, visual inspection of box plots, P-P and Q-Q plots and the Shapiro-Wilk statistic were taken into account. The majority of variables failed to meet assumptions of normality and therefore, non-parametric analyses were employed. The Wilcoxon-signed rank test was used to investigate all contrasts. The contrasts for CPD-Reaction were between pre and post-education, and post-clinical. For the PCQ, contrasts were between pre-education and post-clinical. Cohens’ $d$ was used to interpret the magnitude of effect. To assess convergent validity (Streiner & Norman, 2003), Spearman’s rank order correlation was calculated for the initial total PCQ score, with the post-clinical intention construct of the CPD-Reaction questionnaire. Acceptable convergent validity was operationally defined as a correlation magnitude for total scores in the sample of at least ‘moderate’ ($r > 0.3$). Hopkins’ descriptors for magnitude of effect were used to interpret the magnitudes of Cohen’s $d$ and Spearman’s $r$ (Hopkins, Marshall, Batterham, & Hanin, 2009). All statistical analysis was undertaken using IBM SPSS statistics v22 (IBM Corp., Armonk, NY).
Results

All participants (n = 13 first-year Master and n=13 second-year Master students) who took part in the project responded to all three online surveys, to completion, with no missing data. A summary of practitioner demographics (Table 1) and descriptive findings for each questionnaire are detailed below.

Table 1 Participant demographics of student osteopaths

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</tr>
<tr>
<td>35-44</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand European</td>
<td>8</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Pacifica</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>European</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Multiple</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Māori</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

n = number of participants
CPD-Reaction Questionnaire

The CPD-Reaction Questionnaire measured a participant's clinical intention for adopting depression screening in clinical practice. To investigate the assumptions of normality, visual inspection of box plots, P-P and Q-Q plots and the Shapiro-Wilk statistic were taken into account. The descriptive findings for CPD-Reaction Questionnaire are assigned a value on a Likert scale (Strongly agree: 1, Strongly disagree: 7; never: 1, always: 7; 0-20% = 1, 81-100% = 5; extremely difficult: 1, extremely easy: 7; useless: 1, useful: 7; harmful: 1, beneficial: 7). Table 2 shows the descriptive statistics for the six constructs of the CPD-Reaction Questionnaire:

Table 2: Construct scores for student osteopaths (total sample)

<table>
<thead>
<tr>
<th>Construct</th>
<th>N</th>
<th>Mean (SD)</th>
<th>95% CI [LL,UL]</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td>26</td>
<td>5.97 (2.18)</td>
<td>[5.59,6.35]</td>
<td>6.08</td>
<td>2.5</td>
<td>7</td>
</tr>
<tr>
<td>Social Influence</td>
<td>26</td>
<td>4.14 (1.34)</td>
<td>[3.60,4.68]</td>
<td>4.21</td>
<td>1.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Belief about Capabilities</td>
<td>26</td>
<td>5.27 (0.95)</td>
<td>[4.89,5.65]</td>
<td>5.33</td>
<td>3.23</td>
<td>6.77</td>
</tr>
<tr>
<td>Moral Norm</td>
<td>26</td>
<td>6.48 (0.50)</td>
<td>[6.28,6.68]</td>
<td>6.58</td>
<td>5.33</td>
<td>7</td>
</tr>
<tr>
<td>Belief about Consequences</td>
<td>26</td>
<td>6.31 (0.78)</td>
<td>[5.99,6.62]</td>
<td>6.5</td>
<td>4.5</td>
<td>7</td>
</tr>
</tbody>
</table>

n = number of participants; SD = Standard Deviation; CI = Confidence Interval; LL = Lower Level; UL = Upper Level
Table 3 details the median scores for the individual constructs of the CPD-Reaction Questionnaire.

Table 3: Median scores for CPD-Reaction Questionnaire constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Pre-Education</th>
<th>Post-Education</th>
<th>Post-Clinical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td>5</td>
<td>7</td>
<td>6.3</td>
</tr>
<tr>
<td>Social Influence</td>
<td>4</td>
<td>3.8</td>
<td>4.7</td>
</tr>
<tr>
<td>Belief about Capabilities</td>
<td>3.7</td>
<td>6.3</td>
<td>6</td>
</tr>
<tr>
<td>Moral Norm</td>
<td>6</td>
<td>7</td>
<td>6.7</td>
</tr>
<tr>
<td>Belief about Consequences</td>
<td>6</td>
<td>7</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Construct means were calculated as the average of item scores. Strongly agree = 1, Strongly disagree = 7; Never = 1, Always = 7.

Intention

The ‘intention’ construct of the CPD-Reaction Questionnaire is aimed at exploring the responses to the following two questions – “I intend to screen for depression” and “I plan to screen for depression”. Overall, Figure 1 shows the data is positively skewed. Within the post-education results, one outlier was found (Mdn = 5.5) and one extreme outlier (Mdn = 4). In the post-clinical results one outlier was found (Mdn = 4). In accordance with Laerd Statistics, (2018) outliers are classified as not following the usual pattern, Wilcoxon rank-sign test is not very sensitive to outliers, therefore the outliers were kept throughout the findings.

Figure 2 shows there was a large effect size and significant increase in ‘Intention’ to screen scores for participants in the post-education results ($z = -4.08, p < 0.001, r = -.80$). However, the post-clinical results found a decrease in median scores: participants overall ‘Intention’ scores were found to be significantly lower in the post-clinical results compared to the post-education results ($z = -2.38, p < 0.018, r = -.47$). Despite this decrease, a large effect and significant difference in ‘Intention’ scores were still seen in the post-clinical results compared to pre-education results ($z = -3.393, p < 0.001, r = 0.067$). This suggests that participants’ ‘Intention’ to use depression screening was positively affected by the education session, but this improvement waned following a period of clinical application.
Social Influence

The 'Social Influence' construct aimed at exploring the following three questions: “To the best of my knowledge the percentage of my colleagues who screen for depression is?”, “Now think about a co-worker whom you respect as a professional. In your opinion does he/she screen for depression” and “Most people who are important to me in my profession screen for depression”. Figure 2 show both the pre-education and post-education results were negatively skewed, and the distribution of the post-clinical results were normal, with no outliers.

In Figure 2, there was a trivial but significant change between the 'Social Influence' scores found between the pre-education and post-education results ($r = -0.016, p < 0.001, r = 0$). However, for scores obtained after the six-weeks of clinical practice, ‘Social Influence’ scores were significantly higher than after the education session ($z = -2.158, p < 0.031, r = 0.42$). Overall, there was a large effect and significant increase in ‘Social Influence’ scores observed in the post-clinical results when compared to the pre-education results ($z = -2.605, p < 0.001, r = 0.51$). These results suggest that prior to and after the education session, the majority of participants believed very few of their colleagues do screen for depression. However, after conducting six-weeks of screening for depression, participants believed more of their colleagues would screen for depression.
Belief about capabilities

The ‘Belief about Capabilities’ construct consist of three questions: “I am confident that I could screen for depression if I wanted to”, “For me, screening for depression would be (Useless/Useful)” and, “I have the ability to screen for depression”. Figure 3 shows that the distribution in the pre-education results were positively skewed, with normal distribution being attained in the pre-education and post-clinical results. One outlier was found in the post-education data (Mdn = 5).

Figure 3 shows there was a very large effect size and significant increase in the ‘Belief about capabilities’ scores in the post-education results in comparison with the pre-education results (z = -4.229, p <0.001, r = .83). However, post-clinical results show ‘Belief about Capabilities’ scores were significantly lower than the scores obtained after the education session (z = -2.598, p <0.001, r = .51). Overall, there was a very large effect and significant increase in ‘Belief of Capabilities’ scores in the post-clinical results in comparison to the pre-education results (z = -4.031, p <0.001, r = .79). The results show that participants’ belief in their ability and confidence to screen for depression were positively affected by the education session, and that participants’ belief in their own screening capabilities decreased during the six-weeks of clinical practice.
Figure 3 – Participants belief about capabilities construct median scores. Comparison between pre and post education scores show statistical significance \( p >0.001 \); Comparison between post-education and post-clinical scores show statistical significance \( p < 0.01 \). Overall pre-education and post-clinical scores show statistical significance \( p < 0.001 \).

**Moral Norm**

The ‘Moral Norm’ construct includes two questions: “Screening for depression is the ethical thing to do” and “It is acceptable to screen for depression”. Figure 4 shows the data were normally distributed pre-education and positively skewed post-education, with data negatively skewed after post-clinical. Several outliers were found post-education (Mdn = 6; 6.5).

In Figure 4, there was a very large effect and significant increase in ‘Moral Norm’ scores found in the post-education results in contrast to the pre-education results \( (z = -3.672, p < 0.001, r = .72) \). However, in the post-clinical results, ‘Moral Norm’ scores were significantly lower compared to the post-education results \( (z = -2.684, p < 0.01, r = .72) \). Overall, there was a large effect size and significant increase in ‘Moral Norm’ scores found in the post-clinical results when compared to the pre-education results \( (z = -2.577, p < 0.01, r = 0.051) \). This suggests that participants’ ‘Moral Norms’ regarding their belief that screening for depression is both ethical and acceptable, were positively affected by the education session. However, this improvement in moral norm waned over the following six weeks of clinical practice.
Figure 4 – Participants moral norms construct median scores. Comparison between pre and post education scores show statistical significance ($p > 0.001$); Comparison between post-education and post-clinical scores show statistical significance ($p < 0.01$). Overall pre-education and post-clinical scores show statistical significance ($p < 0.01$).

Beliefs about consequences

‘Beliefs about Consequences’ include two questions, “Overall, I think that for me screening for depression would be (Useless/Useful)” and “Overall, I think that for me screening for depression would be (Harmful/Beneficial)”.

Overall, Figure 5 shows the data in pre-education results was negatively distributed and the post-education results are positively skewed. Post-clinical results show normal distribution. In the post-education results, one outlier was found (Mdn = 5.5) and two outliers found (Mdn = 4) in the post-clinical results.

In Figure 5, there was a very large, significant increase in ‘Beliefs about Consequences’ scores after the education session than before the education session ($z = -3.672, p < 0.001, r = .72$). However, after the six-weeks of clinical practice ‘Beliefs about Consequences’ were significantly lower compared to after the education session ($z = -2.969, p < 0.003, r = .58$). Overall, there was a slight, but non-significant decrease in ‘Beliefs about Consequences’ after the six-weeks of clinical practice compared to before the education session ($z = -0.793, p 0.33, r = .19$). These findings suggest that the participants ‘Beliefs about
Consequences’ were positively affected by the education session, however after screening for depression for six-weeks, the participants ‘Beliefs about Consequences’ waned.

Figure 5 – Participants belief about consequences construct median scores. Comparison between pre and post education scores show statistical significance (p > 0.001); Comparison between post-education and post-clinical scores show statistical significance (p < 0.01). Overall pre-education and post-clinical scores show no significance (p > 0.5).
Programme Commitment Questionnaire

The participants' level of readiness to change and commitment towards depression screening was measured with the Programme Commitment Questionnaire (PCQ). The descriptive findings for PCQ are assigned a value on a Likert scale (Strongly disagree: 1 to Strongly agree: 5). Table 4 summarises the descriptive statistics of the pre-education and post-clinical PCQ results. The results comparing the participants' readiness to change towards depression screening, prior to the education session and after six weeks of clinical practice are shown below in Table 5.

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-education*</th>
<th>Post-Clinical*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hard to take seriously</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2. Strongly committed</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3. Willing to put forth effort</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>4. Wouldn't take much to abandon</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5. I am convinced we need this</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>6. Potential benefits not worth time and resources</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*Item median scores were calculated as the average of item scores. Strongly disagree = 1, Strongly agree = 5
Table 5: Readiness to change and commitment scores for student osteopaths (total sample)

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hard to take seriously</td>
<td>26</td>
<td>1.69 (0.68)</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2. Strongly committed</td>
<td>26</td>
<td>4.02 (0.67)</td>
<td>4</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>3. Willing to put forth effort</td>
<td>26</td>
<td>3.81 (0.78)</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>4. Wouldn't take much to abandon</td>
<td>26</td>
<td>2.79 (1.00)</td>
<td>2.5</td>
<td>1</td>
<td>4.5</td>
</tr>
<tr>
<td>5. I am convinced we need this</td>
<td>26</td>
<td>4.12 (0.69)</td>
<td>4</td>
<td>2.5</td>
<td>5</td>
</tr>
<tr>
<td>6. Potential benefits not worth time and resources</td>
<td>26</td>
<td>1.88 (0.76)</td>
<td>2</td>
<td>1</td>
<td>3.5</td>
</tr>
</tbody>
</table>

N= Number of participants; SD = Standard Deviation

*Item 1 – ‘It’s hard to take screening for depression seriously’*

Participants ‘Item 1’ scores showed no change in the post-clinical results when compared to the pre-education results ($z = -0.500$, $p < .617$, $r = 0.10$). These results indicate that participants perceived screening for depression needed to be taken seriously and suggests that this was not affected by the behavioural change intervention.

*Item 2 – ‘I am strongly committed to screening for depression’*

Participants ‘Item 2’ scores showed no change in the post-clinical results when compared to the pre-education results ($z = -1.667$, $p < .096$, $r = .33$). This result suggests that participants perceived that they were strongly committed to screening for depression and this was not affected by the behavioural change intervention.

*Item 3 – ‘I am willing to put forth a great deal of effort beyond what I normally do to support screening for depression’*

Participants ‘Item 3’ scores showed a moderate and significant positive change in the post-clinical results when compared to the pre-education results ($z = -2.000$, $p < .046$, $r = .39$). This result suggests that participants were willing to put forth a great deal of effort into the depression screening and even more so after the behavioural change intervention.
*Item 4* – ‘It wouldn’t take much to abandon screening for depression’

Participants ‘Item 4’ scores showed a small, positive change in the post-clinical results compared to pre-education results ($z = -0.936$, $p = 0.349$, $r = 0.18$), however this change was not significant, so any changes observed cannot be confidently attributed to the behavioural change intervention.

*Item 5* – ‘I am convinced we need screening for depression in our workplace’

Participants ‘Item 5’ scores showed a moderate effect and significant positive change in the post-clinical results when compared to the pre-education results ($z = -1.999$, $p = 0.046$, $r = 0.39$). This result suggests the behavioural change intervention improved the participants’ perception for the need to screen for depression within their workplace.

*Item 6* – ‘The potential benefits of screening for depression are not worth its costs in time and resources’

Participants ‘Item 6’ scores showed a moderate effect and significant positive change in the post-clinical results when compared to the pre-education results ($z = -2.368$, $p = 0.018$, $r = 0.46$). This result suggests that participants disagreed even more with the statement that screening for depression was not worth its costs in time and resources after the behavioural change intervention.
Correlation between readiness to change and clinical behavioural intent

A Spearman's rank order correlation (Spearman’s \( \rho \)) was conducted to assess if participants’ readiness to change at the start of the programme would have any influence on their clinical behavioural intention after six-weeks of clinical practice.

Table 6: Correlation between readiness to change and clinical behavioural intention.

<table>
<thead>
<tr>
<th>CPD-Reaction Questionnaire</th>
<th>PCQ</th>
<th>Spearman’s ( \rho )</th>
<th>Desc</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Intention(^1)</td>
<td>Item 1</td>
<td>Hard to take this programme seriously</td>
<td>-0.042</td>
<td>small</td>
</tr>
<tr>
<td></td>
<td>Item 2</td>
<td>Strongly committed to programme</td>
<td>0.591**</td>
<td>large</td>
</tr>
<tr>
<td></td>
<td>Item 3</td>
<td>Willing to put forth a great deal of effort beyond what I normally do to support programme</td>
<td>0.647**</td>
<td>large</td>
</tr>
<tr>
<td></td>
<td>Item 4</td>
<td>It wouldn't take much to abandon this programme</td>
<td>-0.310</td>
<td>moderate</td>
</tr>
<tr>
<td></td>
<td>Item 5</td>
<td>I am convinced we need this programme in our workplace</td>
<td>0.614**</td>
<td>large</td>
</tr>
<tr>
<td></td>
<td>Item 6</td>
<td>The potential benefits of this programme are not worth its costs in time and benefits</td>
<td>-0.043</td>
<td>small</td>
</tr>
</tbody>
</table>

Post-clinical intention scores obtained from the CPD-Reaction Questionnaire. PCQ item scores 1-6 obtained prior to the education session. **correlation is significant at the 0.01 level (2 tailed).

Table 6 results demonstrate that participants’ readiness to change is likely to have an effect on clinical behavioural intentions for depression screening during clinical practice. There was a large effect and significant relationship between a participant’s initial commitment to screen for depression, and their resulting intention at the end of the six-week clinical practice, \( r_s(24) = .60, p < 0.001 \). There was also a large effect and significant relationship found between a participant’s willingness to put forth a great deal of effort beyond what they would normally do to support depression screening and their resulting intention at the end of six-week clinical practice, \( r_s(24) = .65, p < 0.001 \). Finally, there was a large effect and significant relationship found between a participant’s belief that there was a convincing need for depression screening in the workplace and their resulting intention at the end of six-week clinical practice, \( r_s(24) = .61, p < 0.001 \).
There were no significant relationships found between a participant’s view of finding screening for depression hard to take seriously and their resulting ‘Intention’ to screen at the end of six-weeks of clinical practice, $r_s(24) = -0.04$, $p = 0.84$, nor in a participants view to abandon depression screening, $r_s(24) = -0.31$, $p = 0.12$, nor for thinking that the potential benefits of depression screening were not worth its costs in time and benefits, $r_s(24) = -0.04$, $p = 0.84$.

Discussion
This quantitative study shows good support for the feasibility of whether a prospective education behaviour change intervention could influence depression screening behaviour amongst a group of student osteopaths. This research also highlights that screening for depression within clinical practice can affect an individual’s commitment to depression screening and in turn influence their clinical behavioural intention.

Clinical behavioural intention
Amongst the variables assessed, the cognitive factor which had the most appreciable change in median scores was ‘Belief about Capabilities’. It appears that the education session not only predisposed an overall improvement of clinical behavioural intention in students to adopt screening for depression, but also collectively, the education session improved students’ belief in their ability to use depression screening in clinical practice.

It is possible this was a new clinical behaviour for students and that this study highlighted salient points regarding the acquisition of knowledge, and how this acquisition pertains to implementing screening for depression. With the increase in clinical behavioural intention scores being the highest immediately after the education session, this could indicate that students initially approached depression screening in clinical practice with confidence, but this confidence appeared to decrease over time as also demonstrated by their raw CPD-Reaction questionnaire scores after screening for six-weeks. Using the five-stage model of adult skill acquisition by Dreyfus (2004), to become competent in new skills, individuals transit through ability levels from novice to expertise. Within this period of learning ‘how to screen for depression’, participants have had little understanding or experience of implementing this into real-life situations with their patients and are likely to be overconfident in their abilities. Whereas, an expert in screening for depression, may be a little more cautious in their confidence to screen, given the many different clinical experiences they have had when using the skill with patients (some possibly positive and some negative), something a novice is yet to experience and foresee. The decrease in students’ clinical behavioural intent may indicate that after being exposed implementing depression screening in the clinical setting, students may have lost some of their initial confidence due to possible challenges faced during the screening process, suggesting some element of uncertainty. According to
Dreyfus (2004), individuals can remain process-focused and detached when developing their skills within real situations. Therefore, there is also a possibility that the reduction in behavioural intention scores reflects the situational aspects of screening for depression, such as inexperience in screening for depression. It is possible this can lead to apprehension in students to screen in case possible psychological issues are raised by patients that students did not feel comfortable discussing or addressing. This lack of comfort has been identified amongst clinicians (Whitebird et al., 2013). It could also be that students might perceive screening to be too intrusive for their patients (Garland, Kruse, & Aarons, 2003). Given the screening trial was only conducted for a period of six weeks, the current study only provided data regarding this short period following the intervention. It is possible that if participants were observed over a longer period of time and having more exposure to screening for depression, they may feel differently in their own abilities and confidence. The continuum of skill acquisition suggests that the more exposure and experience individuals have, the more competent and proficient they become (Dreyfus, 2004), which, within this context, may improve a students’ clinical behavioural intent to screen for depression.

**Readiness to change and Commitment**

Alongside understanding student osteopaths’ behavioural intentions, it was important to assess student osteopaths’ readiness to change and commitment, as an individual’s commitments and readiness towards adopting a new behaviour are thought to be critical for change to occur (Holt, Helfrich, Hall, & Weiner, 2010; Neubert & Cady, 2001; Weiner, Amick, & Lee, 2008). Neubert and Cady (2001), established that initial commitment to a programme, is the strongest predictor of subsequent commitment and therefore, advocated gaining commitment early. This is why the PCQ was provided prior to the education session; by assessing commitment up front this would expose the student osteopaths to the concept of readiness towards adopting a new behaviour. Results would show the commitment level of the student osteopaths prior to participating in depression screening during the six-weeks of clinical practice. For example, if the student osteopaths’ readiness to commit to the programme was low then their actual commitment to the programme would probably be low as well because they were not ready to change in the first instance.

It was observed that the educational behaviour change intervention did not change student osteopaths’ perception of the seriousness and commitment towards screening for depression, which could be explained by the raw results of the PCQ. The initial results demonstrated that students had a high intention of commitment to screen for depression even before they received the education session. This level of commitment was increased and sustained throughout the entire study. Additionally, statistical significance was found with student osteopaths’ willing to put forth a great deal of effort into screening for depression, their perception for the need for depression screening within osteopathy practice and the benefit for screening for depression within clinical practice. Overall this shows that students’ beliefs in
their readiness to change were positive which resulted in their better-commitment towards screening for depression.

It is possible that student osteopaths commitment towards screening for depression could be related to the antecedents of compliance, identification and internalisation, which have been said to be motivators towards change (Neubert & Cady, 2001). Compliance is when an individual’s behaviour and attitude follow the rules or regulations within the work environment to avoid consequences. Identification where an individual aligns their attitudes in order to become connected to their work environment and lastly, internalisation is where an individual’s attitudes are dependent on what a person values or prefers and the characteristics of the work environment. Student osteopaths’ willingness to appropriately screen for depression is possibly the result of the education session, which focused on improving how osteopaths can appropriately screen for depression. Within the education session, students were taught current evidence-based clinical guidelines which may have led to their willingness to screen for depression. It could also be that students agreed to comply with the clinical guidelines to identify patients with undiagnosed depression because they identified with and valued the need to screen for depression within clinical practice. Finally, there is a potential for both researcher and co-researchers, who are known to the participants, to influence social desirability, whereby student osteopaths want to ‘please’, by adhering to all aspects of this study (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Consideration must also be given to the learning environment in which this study took place. Little is known about the clinical education of student osteopaths as explained by Vaughan, MacFalane and Florentine (2013), and this area requires further research. Most of the literature regarding clinical education and perceptions of clinical practice is found within medicine and nursing. The purpose of postgraduate clinical education is to develop the skills and attributes required to manage patients once students graduate (Vaughan et al., 2013). Additionally, cognitive theories suggest that learning is strongly influenced by context and culture (Irby, 1995). Therefore, students’ readiness to change could be attributed to students’ willingness to be highly engaged in acquiring new knowledge, skills and attitudes within the learning environment, in case as a future practicing osteopath they encounter patients suffering from underlying depression.

**Strengths and Weaknesses**

The study’s main strength was that it is the first study to address changing clinical behaviour in a group of student osteopaths. This study measured an individual’s readiness to change and commitment towards a new clinical practice and measured clinical behavioural intention towards implementing a new practice. This study also developed an effective education behaviour change intervention to improve screening for depression within student osteopaths. Another strength is that this study recruited enough students to be adequately powered, so that differences were statistically significant. It is also beneficial for ensuring the
study results are correct and efficient (Jones, Carley, & Harrison, 2003). Effect size was also reported alongside p values, to provide an indication of not only the difference in the magnitude between the averages (median), but also the clinical significance of the difference between data which can be used to inform future studies (Fleischmann & Vaughan, 2019). The strengths of this study may help to direct future research regarding how best to prepare osteopaths implement depression screening into practice.

The study’s main weakness was that it did not demonstrate randomisation of participants, reducing the programme’s effectiveness. It also lacks a comparison group to reduce selection bias, due to the convenience sampling and location. Despite the promising nature of these results, the study was conducted in a New Zealand student-led osteopathic clinic, affecting the generalisability of the results outside of this setting. Students are routinely exposed to learning which, despite post-qualification education requirements, would not be comparable to the environment of qualified and practicing osteopaths. Whilst it is true that the students lacked clinical simulations or role-play of screening, the education session appears to have increased students’ clinical behavioural intent. Thus, the education session may have increased student confidence and also improved students’ preparation for real patient encounters (Ricketts, 2011).

Other weaknesses include the six-week time allocation for implementing the depression screening into clinical practice which may have been insufficient for behaviour change, resulting in the decrease in median scores. As behaviour change and commitment was only assessed over a six-week period, a longer test period may have been associated with improved median scores. As the depression screening education session was facilitated by the principal researcher, this may have biased the results. Therefore, additional support regarding an independent lecturer for depression screening education session who is unfamiliar with the student cohort will need to be included in future studies. Although all questionnaires had an excellent response rate with completion of all data, the CPD-Reaction questionnaire was administered three times which may have resulted in instrument fatigue. Finally, an improvement could be the standardisation of the questionnaire scores to improve score distribution.

Conclusion
The current study showed that student osteopaths’ readiness to change and commitment and clinical behavioural intention for screening for depression in clinical practice improved after an education session. The preliminary evidence shows that a brief educational intervention designed to train student osteopaths in screening for depression is not only feasible but holds promise in potentially improving practicing osteopaths’ depression screening behaviour. Behavioural intention scores were shown to go down during the implementation of screening for depression within clinical practice, which could be due the student osteopaths’ acquisition of learning, how to screen for depression and the short time frame of mastering the real-world context of screening for depression. Student osteopaths’ commitment was shown to be high before the education session began and their readiness to change towards adopting the
new clinical behaviour was positively affected by the education. Initial commitment and readiness to change at the start of the behavioural change intervention was also found to have significance towards predicting student osteopaths’ intent to screen for depression during clinical practice.

A concurrent qualitative study has been conducted in order to provide a greater understanding of the reasons why behavioural intention scores reduced over the six-week period. The qualitative study also aims to improve understanding student osteopaths’ commitment and readiness to change towards adopting screening for depression within clinical practice. This feasibility study seems to be appropriate for assessing readiness to change, commitment and clinical behaviour intention towards implementing depression screening within a group of student osteopaths. This study is important for commitment literature in the healthcare setting because it represents an attempt towards identification of variables which may have an impact on students’ attitude towards commitment to change. Future implementation studies of depression screening into the wider osteopathic community needs to address the barriers identified.
References


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Chapter Three: Qualitative Manuscript

Note: The manuscript presented here is intended for submission to the International Journal of Osteopathic Medicine (IJOM) but rather than the referencing style specified in the IJOM guidelines for authors, the referencing style follows the American Psychological Association ("APA"). Elsevier’s initiative ‘Your Paper, Your Way’ (www.elsevier.com/yourpaperyourway) now permits manuscripts submitted using other referencing formats and APA was selected because it is easier to follow authors’ names in the text. Furthermore, there are minor deviations in reporting standards, such as word-count, to ensure the requirements of this 90-credit thesis are satisfied. Consistent with the recent IJOM initiative to adhere to standards for reporting being adopted in the rehabilitation literature (Chan et al., 2014), the manuscript is informed by the COREQ checklist for reporting qualitative research (Appendix N).
Realities and experiences of using an education intervention to improve the depression-screening behaviours in student osteopaths: A feasibility study.

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Abstract

**Background.** Depression in New Zealand affects more than one in five people over the age of 16 years old. Depression often goes without recognition or effective treatment which places considerable cost upon New Zealand’s healthcare and society. Implementing clinical screening behaviour which aligns with evidence-based guidelines for depression screening has the potential to improve detection of depression and referral for appropriate treatment. At present, screening for depression by osteopaths in New Zealand appears to be a clinical dilemma. Osteopaths often encounter mood disorders, however, have not had sufficient education in knowing how to identify mood disorders. This qualitative study investigated adopting behavioural change in a clinical setting, specifically student osteopaths’ perceptions and experiences of using a depression screening tool, the Whooley questions.

**Objective.** This project investigates student osteopaths’ perceptions and experiences of an intervention aiming to improve depression screening behaviour over a six-week period.

**Methods.** Qualitative design was employed, using interpretive description to ascertain the perceptions and experiences of 26 student osteopaths. Participants received a one-hour education session on depression screening and how to use the Whooley questions. Participants were then provided with reminders to encourage screening for depression in clinical practice, such as A7 cards (10.5 cm x 7.4cm) and A3 posters (29.7 cm x 42 cm) placed within the postgraduate areas. Participants completed an online semi-structured questionnaire about their opinions of the education session. Participants were asked to screen for depression during clinical practice for six weeks. At the end of the six weeks, participants completed another online semi-structured questionnaire regarding their perceptions and experiences of adopting the Whooley questions and the use of reminders during clinical practice. Thematic analysis was used to analyse the data.

**Results.** Participant responses suggested the education session encouraged positive behaviour change regarding the adoption of depression screening. The Whooley questions were found to be a useful screening tool, and participants believed that those patients who returned a ‘yes’ result could then be easily referred for further assessment. Finally, the A7 reminder cards were perceived to be a key tool for facilitating behaviour change and depression screening in a clinic setting.

**Conclusion.** The education session was perceived to be relevant and informative for screening for depression. After six weeks of screening for depression, participants felt they were able to screen, and some participants did refer patients for an accurate diagnosis and treatment.

**Key words.** Depression screening, behaviour change, education, osteopathy
Introduction

In New Zealand, depression affects one in five people over the age of 16 years (Browne, Wells, Scott, McGee, & New Zealand Mental Health Survey Research Team., 2006). Depression is a mood disorder that affects the way a person feels, thinks or behaves which has significant challenges for a persons’ quality of life (Bromet et al., 2011). Many individuals with depression have their symptoms go unrecognised and undiagnosed, which continues to add not only to the economic burden of healthcare costs, but also has a strong association with the rising suicide rate within New Zealand (Hirschfeld, 2001; National Advisory Committee on Health and Disability., 1996). New Zealand osteopaths are primary healthcare professionals, who frequently encounter mood disorders such as depression (Sampath & Roy, 2015, 2018) however they often don’t realise it. Knowing how to accurately screen for depression could play an important role in reducing the amount of undiagnosed depression. Current research by Sampath and Roy (2015 & 2017) reveal insights into the difficulties osteopaths have in the management of mood disorders; including the barriers to identifying mood disorders. Osteopaths in Sampath and Roy’s (2015) study, felt they lacked knowledge, confidence and experience when dealing with mood disorders due to insufficient education. The current New Zealand guidelines (Ministry of Health, 2008) for identifying common mental disorders recommends screening for depression in the adult population using the Whooley questions (Whooley, Avins, Miranda, & Browner, 1997). Implementing a new behaviour into clinical practice, such as using the Whooley questions and the help question, has the potential to align the osteopathy profession with best practice. However, such behaviour requires healthcare practitioners to have a high index of awareness regarding depression, to know what the risk factors are, and also have access to an appropriate referral process (New Zealand Guidelines Group, 2008). Apart from being provided with new clinical information, the success of screening for depression is also dependent on how effective the behaviour change intervention is, and above all, the readiness to change of health professionals and their commitment to implementing a new practice (Holt et al., 2007).

Following an in-depth search of the available literature, no qualitative research has been found to date which provides insight into behaviour change, commitment and clinical behaviour intention in osteopaths who screen for depression. Therefore, the current preliminary research is the first of its type to investigate student osteopaths’ perceptions and experiences of an educational behaviour change intervention. This research may form a basis from which to modify the current training of osteopaths in New Zealand, and potentially other tertiary training establishments worldwide, to better prepare osteopaths to screen for depression. It may also help to direct future research regarding how to best prepare graduated osteopaths to implement depression screening in clinical practice. Therefore, this research investigated whether it is feasible for a one-hour education session on depression screening to influence behaviour change in a group of student osteopaths. The specific objectives of this qualitative feasibility study are as follows:
1. To implement an educational intervention that aims to improve depression screening behaviour in student osteopaths’ clinical practice, using the screening instrument the Whooley questions (Appendix G).
2. To explore student osteopaths’ perceptions and experiences through a feedback questionnaire (Appendix K), on the one-hour education session (Appendix D).
3. To understand student osteopaths’ perceptions and experiences of the Whooley questions as a screening tool and the utility of receiving reminders, through a semi-structured questionnaire (Appendix L).
4. To provide a basis for future research to establish potential effectiveness of a behaviour change intervention on screening for depression in the practicing osteopathy community.

Methods
Design

This study was a prospective feasibility study employing qualitative methods for data collection and analysis to add breadth and depth of understanding and corroboration (Teddlie C, 2003). A full overview of the study procedures, for the purpose of thesis submission, can be found in Appendix J.

Participants

Recruitment. Ethical approval was gained from the Unitec Institute of Technology Research Ethics Committee (2018-1041) prior to recruitment. Twenty-six student osteopaths were recruited through convenience sampling. All students were undertaking a Master of Osteopathy programme and were currently completing 1000 hours of clinical practice in a tertiary teaching clinic in New Zealand.

Eligibility Criteria. In order to be included in this study, participants were required to satisfy the following criteria: Have current enrolment in the clinical training component of the Master of Osteopathy programme. Participants were not eligible to participate if they were not enrolled. Participants were offered the opportunity to withdraw their data from the study up to five working days after the final data collection.

Setting and Location. The study was conducted within an osteopathic student-led clinic in New Zealand.

Consent. At the commencement of each educational session, the study was explained to the participants by the researcher with a participant information form (Appendix B), which was given to each participant to read and discuss. Following this, informed consent was obtained from each participant using the consent form (Appendix C), prior to the commencement of the data collection phase of the online questionnaires.

Intervention. A single, one-hour depression screening information session (Appendix D) for participants was provided by the researcher within scheduled class time. The education session was delivered twice in the same week. The first education session was presented to the first-year Master participants, two days later the second education session was presented to the second-year Master participants. In order
to ensure the delivery of information between the two presentations was consistent, the principal researcher conducted three pilot iterations of the education session for the co-researchers before presenting the education session to the participants. Both education sessions were recorded to ensure consistency of information and to capture any questions that may have differed between the first and second presentations. The information for the education session was compiled from the New Zealand Guidelines Group (Ministry of Health, 2008); Screening for Depression in Adults (U.S. Preventive Services Task Force et al., 2009); clinical guidelines for mood disorders (Malhi et al., 2015) and from talking with a panel of experts within the mental health field. Both supervisors for this research project were clinically experienced and academically trained in mental health.

On completion of the education session, participants were invited to complete the online education feedback questionnaire via online platform, Survey Monkey™ (SurveyMonkey, Palo Alto, CA, USA). Each participant was then given an A7 reminder card which detailed the Whooley questions on the front and on the back were important helpline numbers and online resources for depression and suicide (Appendix E). A3 posters were placed within the participants resource and kitchen area, away from the public. These visible resources aimed to encourage participants to ask the Whooley questions during their six-week clinical practice. Screen-savers were also loaded onto the reception computers. A3 posters and screen-savers can be found in Appendix F.

Participants were asked to screen all patients for depression using the Whooley questions (Whooley et al, 2007) and the help question (Arroll et al, 2005) within their designated clinical rosters over a six-week period. For the purpose of the current study, and for the remainder of the thesis, the “Whooley questions” will refer to the application of questions both one and two as well as the additional help question, as you can find below:

1. During the past month, have you been bothered by feeling down, depressed or hopeless?

and

2. During the past month, have you been bothered by little interest or pleasure in doing things?

and

3. Is this something you would like help with?

If participants received positive responses to one or more of the questions asked, they then referred the patient to their general practitioner (GP) for further assessment. Participants provided patients with depression helpline numbers and online resources if the patient thought it beneficial. At the completion of six weeks, students were invited to complete the online post-clinical follow up questionnaire.
Data Collection

The development of online semi-structured questionnaires was guided by the CPD-Reaction Questionnaire (Légaré et al., 2017) and consultation with co-researchers and one qualitative researcher consistent with interpretive description conducted by (Thorne, 2008). Two questionnaires were developed: the ‘Post-Education Questionnaire’ to obtain feedback from the education session from the participants (Appendix K) and the ‘Post-Clinical Questionnaire’ to obtain participants perceptions and experiences of adopting the Whooley questions and utility of reminders during six weeks of clinical practice (Appendix L). The Post-Clinical Questionnaire was informed by several of the constructs detailed in a quantitative questionnaire employed in a concurrent quantitative study, the CPD-Reaction Questionnaire (Légaré et al., 2017). The constructs included themes such as intention, beliefs about capabilities, beliefs about consequences, and social influences. Questionnaires included open and closed questions. Questionnaires were administered via the online platform with data collected immediately after the education session and, at six weeks post clinical practice. For the full overview of the study procedures see Appendix J.

The Post-Education Questionnaire (Appendix K) consisted of seven questions aiming to explore the participants’ perceptions and experiences of the education session. The following are examples of key questions that were asked:

- How was your overall experience of the session?
- Did you learn any useful knowledge that you can utilise in clinic? If so, please explain?
- What would you change about the session to improve it?

The Post-Clinical questionnaire (Appendix L), consisted of twelve questions aiming to understand participants’ perceptions and experiences of adopting the Whooley questions and the utility of reminders. Examples of key question prompts were:

- Can you provide an example of when you used the Whooley questions in clinical practice?
- Discuss how the reminders (A7 cards, posters and screen-savers) throughout the six-weeks served you in your clinical practice.
- Explain any difficulties with implementing the Whooley questions into clinical practice.

Data Analysis

All responses were anonymised prior to data analysis and participant responses were placed into Microsoft Excel (Excel 2010, Microsoft Corporation, USA) spreadsheets. Interpretive description (Thorne, 2008), was employed to inform the qualitative process to generate knowledge relevant for the clinical context of applied healthcare, helping to understand the participant’s reality of the education session, adoption of the Whooley questions and utility of reminders. Given the data set was pre-determined by a
semi-structured questionnaire in the survey, responses to the questionnaires were specifically focused towards the education session and implementation of depression screening in clinical practice. The researcher analysed the data initially into two sections – education and clinical practice, based on the free-text responses of each questions. Data was repeatedly read, for full immersion of the responses and a dialectic approach in keeping with the process described by Sampath & Roy (2018), was used to discover the truth between the data and development of themes (Thorne, Kirkham, & O’Flynn-Magee, 2004). The same guiding question was used, ‘What is happening here?’ (Thorne, 2008; Thorne, Kirkham, & MacDonald-Emes, 1997; Thorne et al., 2004). The dialectic approach continued as the relationships within the data were further developed and debated with co-researchers and one experienced qualitative researcher. This iterative process allowed themes to become coherent and the truth to be established within the two sections (Thorne et al., 2004).

Trustworthiness

Discussions, review of the processes, and development of the thematic description occurred between the researcher, the co-researchers and one experienced qualitative researcher. This reflexivity approach established the robustness of the approach and supported the credibility of the data analysis (Molintas & Caricativo, 2017).

Findings

This study demonstrated that the education session helped the osteopathic students to understand the need for screening for depression. It also demonstrated how screening for depression could be easily transferred into clinical practice. Analysis of the education data identified an overarching theme of clinical applicability alongside two broad themes: appreciation for screening for depression and the need for interactive learning within the session. Thematic analysis of the clinical practice data identified three key themes: perceived clinical utility of the Whooley questions, perceived barriers to using the Whooley questions and perceived efficacy of reminders.

Part One: The education session

Analysis of the questionnaire data show the education session had a significant impact on the student osteopaths. It revealed an overarching theme of ‘clinical applicability’. In addition to this broad theme, there were two related themes of ‘appreciation for screening for depression’ and ‘the need for interactive learning within the session’.

Clinical applicability

Participants acknowledged the value of the education session perceiving it to be both clinically relevant to the profession and within the Master of Osteopathy programme. There was an understanding of the value of screening and a comfort with screening for depression straight away:
“Osteopaths are in a unique position to screen and should be at the forefront of addressing the alarming statistics. Education should be mandatory at both undergraduate and postgraduate as well as ongoing professional educational levels” (Q1P1);

“[The education session] highlighted the most important factors about depression in New Zealand and why it is important to screen for it” (Q2P4);

“I see how I can directly apply to my clinical experience” (Q1P3).

**Appreciation for screening for depression**

Participants who responded to the questionnaire appreciated the prevalence of depression, that they were given tools and felt that they could implement screening. This theme also includes sub themes ‘need for depression screening’ and ‘appreciation of the simplicity of tools and reminders’.

Two thirds of participants felt more confident after learning how and when to screen for depression and how to refer:

“[The education session], has given me the confidence to screen for depression which I didn't previously have” (Q1P2);

“Very informative providing relevant information that is applicable to everyday practice as an osteopath” (Q1P19).

**Need for depression screening**

Participants were unanimous in their responses that there was an obvious need for education regarding depression. Half of the participants recognised the importance of screening for depression and felt that osteopaths have a responsibility as healthcare providers to screen. Participants commented that the learning material regarding the epidemiology of depression highlighted clinical relevance of why adopting depression screening in clinical practice is required:

“[Screening for depression] is our responsibility as osteopaths and healthcare providers. However, I thought the screening process would be more difficult or complex” (Q2P16);

“[The education session] was a real eye opener and I was surprised by the statistics in Māori populations” (Q2P25);

“Really eye opening. I’m shocked at the rise of depression and enjoyed how [research author] explained the presentation. It’s good to know the effect of depression and its impact especially in New Zealand and now what we can do to help identify and refer” (Q1P20).
Appreciation of the simplicity of tools and reminders

Over two-thirds of participants commented on their appreciation for the simplicity of Whooley questions and for the A7 reminder cards. Participants reported the Whooley questions made screening for depression easy and simple to implement. Over half of the participants reported that the reminder card they were given to use as a guide, which annotated both the Whooley questions and referral pathways, decreased the amount of perceived complexity in screening for depression, hence the ‘Clinical Applicability’:

“Useful screening tools [Whooley questions] to go forward and use in clinic” (Q2P4);

“I did not expect that we’d be given useful screening tools [Whooley questions] to actually go forward and implement in clinic” (Q2P20);

“I didn't quite realise how easy it was to screen” (Q2P16).

The need for interactive learning within the session

The majority of participants recommended that the education session could integrate "role-play" and allow for practical application of using the Whooley questions on peers, prior to screening patients. Participants felt practising depression screening could be helpful, especially with building confidence prior to patient encounters:

“It would be handy to role play the screening questions with each other, perhaps integrate a few interactive tasks” (Q4P15);

“Maybe an interactive role-playing practice in peers of actually navigating a screening or an intervention. Actually, to practice it” (Q4P2).

This theme of interactive learning was also reiterated by participants in the Post-Clinical Questionnaire. The majority of participants recommended implementing a practical aspect such as role play and guidance in asking the Whooley questions into the education session. Two participants noted they had difficulty with “odd” patient responses. Three participants felt the questions were confrontational to patients:

“More focus on steps after positive answering Whooley questions” (Q12P6);

“Could do with more practical elements of actually practising asking the questions. But more importantly maybe some actual ways of dealing with the answers” (Q12P2);
“Ways to implement them into an open conversation so it doesn’t seem confronting” (Q12P16).

Part Two: Clinical Practice

Analysis of the questionnaire data revealed three key themes “perceived clinical utility of the Whooley questions”, “perceived barriers to using the Whooley questions”, and “perceived efficacy of the reminders”.

Perceived clinical utility of the Whooley questions

Participants acknowledged that the education session was clinically useful in providing an easy and straightforward direction on how to screen for depression during clinical practice. Within this theme were three sub-themes ‘Appropriateness of Whooley questions’ and ‘Benefits participants found with screening for depression’, and ‘Future intentions of using the Whooley questions’.

Part of the questionnaire asked participants for examples of using the Whooley questions in clinical practice. This revealed over half of the participants found depression screening with the Whooley questions effective, particularly with the ‘help question’ which led to a referral for further assessment or provision of further resources for self-help. Examples of positive screening are detailed below:

“I screened an elderly patient who had chronic lower back pain. She ended up telling me that she didn’t enjoy life at the moment and just wanted to lie in bed all day due to stressful events in her life. This allowed me to refer back to her GP to facilitate other referrals to a therapist and she got the help she needed” (Q1P24);

“I had a patient who had her father pass away a month ago and she had presented with a musculoskeletal complaint and had headaches. I asked her the Whooley questions and she answered positively to both and I referred her to a therapist to provide professional help” (Q5P21);

“Used it on a new patient. They answered positively to the first two questions and then we asked the help question and they said they didn’t need any help. This was due to having a good family support network. I let them know if they changed their mind, they should feel free to ask for my help” (Q1P9).
**Appropriateness of Whooley questions**

Over two thirds of participants felt that the Whooley questions were beneficial and liked that they were very quick and easy to implement into clinical practice. Some participants felt that they were good questions as they appeared to cover the symptoms of depression:

“The Whooley questions were thought-out, safe and appropriately targeted within our scope of practice” (Q1P2);

“They [the Whooley questions] cover the main symptoms of depression, e.g. feeling low, down, hopeless and little interest in doing things” (Q8P7);

“They are good guideline questions, to get a base idea of what a person is feeling, which is exactly the role of a ‘screen’ is. So, I think they are good” (Q8P2).

Participants were asked for their perceptions about whether the Whooley questions would benefit patients, if practicing osteopaths used it. The majority of participants identified that screening for depression in patients would potentially reduce the common barrier of seeking help when mentally unwell, with automatic screening helping to destigmatise depression symptoms. Additionally, participants liked that the screening fitted seamlessly into an osteopath’s consultation which could result in becoming better informed of their patients’ psychological health, fulfilling the whole-body approach of osteopathic care. Importantly, the greatest benefit that was reported was the ability to refer the patient to the appropriate services to help the patient receive an appropriate diagnosis.

**Benefits participants found with screening for depression**

More than half of the participants found that it was more appropriate to screen new patients and patients who were returning to the clinic within six-months\(^1\) as opposed to screening returning patients. When participants were asked whether they believed that using the Whooley questions would benefit patients, five participants commented that it would remove the barriers patients may feel and help normalise depression. Additionally, participants believed screening for depression would better inform osteopaths about their patient’s psychological status, resulting in both early intervention through a referral to the appropriate services for treatment and promote better management of the patient:

“The Whooley questions allow for better identification of mental health issues that the patient may not be fully aware of and this can open up the door for further services for support” (Q7P5);

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\(^1\) Clinic policy of the student-led clinic regarding patients who have not visited the clinic within six months are called six-month returning patients and are treated as new patients with a comprehensive intake to capture any potential changes in health status or lifestyle which may have occurred.
"Depression is a hard topic to bring up to people, so if practitioners are asking every patient that walks through their door, that is one less barrier for the patient to go through to get help" (Q7P7).

In addition, some participants felt the Whooley questions were a good place to start with screening patients for underlying depression and thought it was useful for those osteopaths who were not confident asking about depression.

**Intentions of the using the Whooley questions**

The Post-Clinical Questionnaire asked participants if their intention to use the Whooley questions changed over the course of six weeks. In addition to this question, participants were asked about their future intentions of using the Whooley questions.

Participants were unanimous in their intention to use the Whooley questions during the six-week clinical practice and this was further reinforced by the majority of participants commenting they felt confident with screening. This appeared to be due to participants perceiving the importance for screening for depression, and their willingness to become better at screening:

“Yes, I did. It's an area of practice I want to better develop! I know of the importance of screening, so I want to be a lot better at it and implement it with all my patients. It just takes practice and getting used to asking” (Q3P2);

“I did intend to as I can clearly see the benefits. It also didn’t seem too hard or too much of an effort to implement them” (Q3P7).

It appeared from the response that all of the participants used the Whooley questions at some point. When participants were asked about their future intentions to screen for depression, over two-thirds of the participants said they would continue to use the Whooley questions in future practice. This appeared to be mostly due to participants perceiving the importance of screening and that the Whooley questions are easy and effective in asking the right questions to understand if the patient could have underlying depression and need referral for further assessment.
**Perceived barriers to using the Whooley questions**

Whilst all participants were supportive of screening for depression during the six weeks of clinical practice, some found barriers which impacted their intentions to use the Whooley questions. Barriers included forgetfulness, which was the main reason for not screening for depression in clinical practice, unexpected patient responses, limited number of patients and self-imposed limitations. This theme includes the sub-themes ‘Whooley questions were challenging to articulate’, ‘Difficulty with help questions’ and ‘Discomfort with patient response’.

**The Whooley questions were challenging to articulate**

Five participants found that the language and exact wording of the Whooley questions were challenging during the six weeks of clinical practice. Participants were asked to screen all patients, and participants who screened for depression in returning patients, found it challenging to ask patients, especially where there was no context to why the question was being asked. Three participants felt their own self-imposed limitations were a barrier, such as thinking it would be awkward to ask these questions, or that the patient would not feel comfortable especially in situations where there were observers. Therefore, some participants felt that they needed more time and practice to familiarise themselves with the Whooley questions:

“It was hard to say without sounding awkward or unnatural” (Q2P8);

“I’m still not 100% familiar with the questions so they did not roll off the tongue in a casual manner and instead came across forced and muddled” (Q1P9);

“Difficult to integrate into conversation with returning patients” (Q1P25).

Another participant found it to be uncomfortable as they felt exposed talking about depression with the patient themselves:

“I initially found it difficult as I still find it difficult to ask these questions or delve deeper into those areas because I myself find it difficult to open up/talk about how I’m feeling with a stranger. It can’t be easy for a patient to open up on a first visit (initial case history). So, I have tried establishing rapport and a “chilled” vibe to make asking questions easier for my patients” Q1P2.

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2 Clinic policy of the student-led clinic is to classify patients as new patient (NP), six-month returning patients (6MRP) and returning patients (RP). Only NP and 6MRP are given a comprehensive client intake. Therefore, RP, are provided with follow-up and treatment and will not be taken through a client intake unless they have not been to the clinic within 6 months.
Two participants did not follow the exact wording of the Whooley questions with one commenting they changed the words to reduce the awkwardness:

“I found it awkward between the patient and I, so I still used the theory but changed the words a bit” Q3P16.

One participant didn’t continue

“I tried it a couple times. Then stopped it” Q1P10.

**Difficulty with the help questions**

Six participants felt they lacked confidence when asking the help question and felt they needed more guidance. The lack of confidence was two-fold; firstly, due to only seeing a limited number of patients over the six-week period and therefore not having many opportunities to implement depression screening. Secondly, uncertainty about how to phrase the help question.

“I think that if they would have said yes to the help questions, I would not have been that confident as I am still unsure in myself how you would handle that situation and if my advice could be helpful” (Q1P5);

“I also felt unprepared for what actions to take if the patient did want help” (Q1P9);

“In the last three weeks, I didn’t have any new patients or six-month returning patients to screen” (Q3P7);

“The number of patients I saw over that time (six weeks) was limited, and the majority were follow-up patients” (Q3P19).

**Discomfort with patient response**

Patient response was a barrier that was reported by eight participants who felt unprepared to deal with patient responses or lacked confidence in the process of dealing with them. Two participants commented that they had lost confidence in screening for depression for fear the questions would come across as confrontational to the patient. Another two participants also commented that screening for depression was met with patient resistance:

“Patients were resistant to the questions, I found it became a moment of awkwardness between the patient and I” (Q6P5);

“I found that patients seem to find these odd questions and wanted to know my intention of the questions before answering” (Q3P7).
Perceived efficacy of the reminders

Participants found the A7 cards very useful in situations where they could not remember the questions, especially during consultation with their patients. Three participants commented that the A7 cards increased their motivation to screen. Additionally, participants felt the A7 cards became a helpful resource to provide to patients, with two participants stating they gave the A7 card to the patient in order to access the helpline numbers or online resources, if required:

“The reminder cards were a great size” (Q2P3);

“The cards are fantastic. I have one on the wall above my consulting desk and it is super excellent to have it there as a reminder of the wording of the questions. It also reminds me to ask. I will be taking it with me when I graduate to put up. The clinic posters were also a good reminder” (Q2P2);

“The reminder cards were really great. I have one in my clinic room, which is easy to view for me and it is also in sight for my patients too” (Q2P2).

The posters were also found to be useful as an addition to the card. Two participants commented that they were a good reminder to ask the Whooley questions and at times became a talking point amongst the students and tutors. However, two participants commented they became habituated to the posters and felt they had tuned out to the posters and took no notice of them. With regard to the screen savers, two participants experienced the screen savers to be unhelpful due to the computers not working in their private consultation rooms and that they never noticed the screen savers on the reception computer screen. One participant commented the screen savers may have been “overkill”.

Discussion

Overview.

Participants acknowledged the value of the education session perceiving it to be both clinically relevant to the profession and within the Master of Osteopathy programme. This suggests that our screening approach may be appropriate for clinical implementation.

To the best of our knowledge, this is the first study to provide new insight into depression screening behaviour amongst a group of student osteopaths. Responses from the questionnaires revealed that the students’ perceptions and experiences of the educational behaviour change intervention helped their understanding of how to screen for depression. The Whooley questions was found to be an easy and

3 Within the student clinic, the majority of notes are paper based, therefore no screen savers were loaded onto the consultation room computers. The screen savers were only the reception computer which students frequently check and use for patient processing.
effective screening tool, which helped student osteopaths screen for depression in clinical practice. From the results, five of the students who screened their patients did experience positive responses for depression; three students provided help to patients by referring for further assessment to their GP and two students provided resources for depression. However, students did encounter several barriers which limited their willingness to screen for depression, such as unexpected patient responses, prior poor self-beliefs, low patient numbers and forgetfulness. The study did suggest that these students perceived a need for a more detailed process of how to screen for depression; specifically, they wanted to know how to approach asking the screening questions with patients, and how to deal with patient responses. This resulted in students asking for more “practice” with the Whooley questions and for more guidance with navigating the ‘help’ question. This could also mean the education session required improvements in further clarifying an osteopath’s public health role in screening for depression.

**Education session**

Findings from this study suggest that the education session revealed that depression screening skills can be imparted by a simple but structured workshop followed by reminders over a short period. Participants felt that the education session was “a relief”, because they finally got some direction about how to identify depression clinically. This finding suggests that this was a prior need that, until the current study provided them with the knowledge, had not been met. A similar lack of knowledge was also found in practicing osteopaths (Sampath & Roy, 2015, 2018). It appears that the education session contained enough information within the one-hour time frame to implement screening for depression in clinical practice, but there are questions in regard to whether the education session was effective enough. Irrespective of having a short time-frame, short-term professional development can be effective and have positive outcomes, but is dependent on what happens within the session (Lauer, Christopher, Firpo-Triplett, & Buchting, 2014). It appears possible that the education session was able to address presentation of the problem, the need to address the problem and direct application to professional practice but lacked a practical component on how to apply the questions. Opportunities for participant practice is suggested to be an important design feature to promote the development of learning (Lauer et al., 2014). Therefore, this education session design could be improved by including interactive learning in order to build confidence prior to the reality of clinical practice. It is evident that interactive approaches are more effective in changing clinical practice (Grol & Grimshaw, 2003), whereby, individuals “learn to practice as they learn about practice” (Coles, 1996). The difficulty arises, however, in the face of time restrictions, with only having a one-hour time-frame; constructed around estimated and realistic timings which could work with busy practicing osteopaths in private practice. Thus, interactions such as role-play could be possible. However, there is scope to think about how to incorporate the balance between theory and practical elements. Further research could focus on interactive strategies that may work within this context, such as role-play. There is a possible avenue, given the time restrictions, to explore building confidence and exposure to “clinical scenarios” using electronic flashcards as described by Schmidmaier et al. (2013).
In addition to the education session, it could also be possible to include an online component especially if time is not available for individuals to attend a face-to-face session. The online education programme could also help with any depression screening difficulties that people are experiencing. For example, the New Zealand tertiary institutions provide eLearning software, whereby students can gain online access to their paper requirements and can also ask for guidance through online forums. If an interactive session is not able to be conducted, providing students with the ability to work through any practical difficulties over the six-week period by means of an online forum could prove beneficial. This may lead to students more readily overcoming barriers to continue to screen for depression. These contributions may also offer insight into how others have navigated similar scenarios when screening for depression, which in turn could reinforce the approaches they used, and provide an opportunity for building a library of clinical scenarios of screening for depression. Furthermore, an online component allows for critical reflection, which Fryer (2008) argues is an educational responsibility of osteopathic educators. Finally, looking beyond the learning environment, it is possible the education session could be adjusted to being offered online, similar to the current “Child and Adolescent Health Recertification Programme” (OCNZ, 2017), and therefore, could provide access both nationally and internationally.

One of the strategies used within the education session was to bring current evidence to the forefront in order to enhance clinical behaviour change. The education session provided information about the “benchmark” of where osteopaths need to be clinically, in terms of the depression screening guidelines. According to Mazmanian, Davis, and Wood, (2009) “benchmarking” is a tool that can be used to compare personal performance with standards of excellence as demonstrated by clinical guidelines. This could be a reason why students felt the education session was relevant to the practice of osteopathy and informative enough so that they could screen for depression. Furthermore, this education session for screening for depression offers a framework for other similar healthcare issues that require health professionals to screen for, such as diabetes, drugs and alcohol, and domestic abuse.

The education session could also be improved on with more practical considerations around examples of how patients may answer the ‘help’ question and provide the appropriate referral pathway. Despite the participants reporting that the Whooley questions were simple and easy, at the end of six weeks, some participants were apprehensive with asking the ‘help’ question as they felt out of depth in terms of how they would respond if the patient said “yes”. It could be that the education session did not place enough emphasis on the fact, that if the help question is asked and there is a positive response to one or both Whooley questions that for the purposes of this study, this would be prompts for referral to a GP for further help and assessment. Additionally, Lombardo et al. (2011) indicates that the help question provides discussion between health practitioners and patients, however the education session did not provide any insight such as examples of what participants may encounter such as reactions, comments, and the questions patients may have given around the ‘help’ question. Furthermore, the purpose of the ‘help’ question may only highlight those who are willingly to accept additional support (Baker-Glenn, Park,
Granger, Symonds, & Mitchell, 2011). This can leave health professionals in a conundrum, as on one hand the clinical guidelines recommend depression screening for the adult population, with positive responses to screening to be referred to the GP or specialist mental health services. On the other hand, patients who are not willing to get help, may, in some instances, prefer to receive informal help from supportive family or friends (Griffiths, Crisp, Barney, & Reid, 2011) or manage it themselves (Baker-Glenn et al., 2011) rather than be treated under the medical system. Another consideration when encountering patients who do not want help, is that patients may feel there are limited benefits to obtaining help and/or the fear of stigma around mental health treatment. For example, in New Zealand, there have been enormous efforts to reduce the amount of stigmatism that individuals are exposed to in society (Wyllie & Brown, 2011). Mass media campaigns such as Like Minds, Like Mine, have attempted to normalise mental health by sharing stories that even kiwi role models in society such as John Kirwan can and have experienced mental health issues such as depression (Thornicroft, Wyllie, Thornicroft G, & Mehta, 2014). Therefore, the education session could provide participants with more insight regarding what could be expected when asking patients, the ‘help’ question. Also, having a variety of “treatment” options available for practitioners to share with their patient, even though a referral to a GP or mental health specialist is said to provide the best outcome. If the education session was to highlight these options, then the participants may have felt more comfortable regarding asking all participants whether they wanted help or not.

Interestingly, one participant appeared to be reluctant to screen, reporting they only screened a couple of times and gave up. There are limitations to discovering the reasons for their response. It could be possible that for this individual, education may not have helped them to make the change towards screening for depression, despite being in the best interest of the patient. It could be that they were reluctant towards change because they did not personally agree with the implementation and that their mindset was one that prevented them from screening for depression. Furthermore, not continuing with depression screening, could be seen as resistance given they failed to comply with the depression screening programme (Herscovitch & Meyer, 2002). Knowing the gaps between individuals attitudes towards a behaviour, and addressing these in the education session and prompting students to refer back to the slides, which were given as resources, may help with improving screening for behaviour (Holt et al., 2007).

Clinical Practice
Perceived clinical utility of the Whooley questions

The Whooley questions were found to be largely effective. Participants felt that the Whooley questions were an appropriate screening tool and was easy and simple to use. One of the possible reasons for this could be that the Whooley questions fitted seamlessly within the systems screening process especially for new patients and six-month returning patients. It is also possible that the students liked the Whooley questions because it was similar to other systems screening questions - quick, simple and verbally
delivered. However, one study by McGlone, Martin and Furber (2016) has shown this to be the opposite. Midwives experience with using the Whooley questions as a screening tool felt they lacked knowledge of how to use the Whooley questions, that it was unclear to why they would use it, and instead the midwives relied on intuition and experience (McGlone, Martin, & Furber, 2016). The difference of experiences between the participants in this current study and midwives was education around using the Whooley questions, which further solidifies that training is needed for the Whooley questions to be effective.

**Perceived barriers of the Whooley questions**

The barriers that participants found prevented them from using the Whooley questions were forgetfulness, internal interference and articulating the questions verbatim. Finally, participants experienced lack of confidence or experience which is similar to findings of health practitioners using the Whooley questions in a study by Beauchamp (2014). Two respondents in the current study criticised the Whooley questions stating the questions felt scripted or forced and it is possible that if there was any deviation from the Whooley questions with these two respondents, this would have lowered the sensitivity of the screening tools.

According to Augustin (2014), students’ forgetfulness may be attributed to the fact that new knowledge we acquire is likely to be forgotten if it is only used once. With the limited patient numbers, the participants reported, this may have played a part in not having enough practice in screening patients for depression. However, if the Whooley questions were applied in a simulated learning situation this may provide a relatively simple solution. Simulated learning provides a valid learning tool in clinical education to target learning objectives and for this to occur it must be used alongside clinical practice and be closely linked to it, however further research would be needed to discover how often simulation would be required in this setting (Lateef, 2010; Kneebone, Scott, Darzi & Horrocks, 2004). Klingberg (2010) states when practicing a skill, even if not on ‘real’ patients this can improve working memory, and therefore forgetfulness can be avoided. Another reason for forgetfulness or trouble with verbalising the questions, is the possibility that students may be overwhelmed and stressed with the sheer amount of new information expected within the learning environment (Radcliffe & Lester 2003). The ability to retain both the factual (the what) and the procedural (the how) aspects of the behaviour change intervention may have been reduced (Augustin, 2014), particularly given the students concurrent educative requirements.

Additionally, participant’s internal interference was a potential barrier to screening for depression (Stein-Parbury, 2018). Internal interference in this situation could be where students’ own thoughts, feelings and value judgements closed off the possibility of screening the patient for depression, especially with returning patients they were already treating. There is a possibility that students had their own vulnerabilities in terms of either experiencing depression themselves, or perhaps knowing someone who does. It is also possible this individual may be aware of the underfunded and under resourced mental health services within New Zealand (Radio New Zealand, 2016), thereby lacking confidence in the system and any potential benefit of referring onwards. These issues have been widely discussed within NZ and
were brought up as a discussion point within the education session Health professionals can also have their own stigmatism towards depression, or may have had a personal experience with depression and this may cause them to avoid asking about it in others. Thus, students with associations with depression, on encountering a patient presenting with possible depression may have unknowingly avoided interacting with the patient in an effort to protect themselves (Stein-Parbury, 2018). Reluctance to change could also be a factor, possibly being a student and implementing possibly yet another new behaviour or learning objective in clinical practice, is deemed too much for them at this time. Potentially, the students may have seen others in their class have difficulty with screening or being unmotivated towards screening. Patient barriers such as patient responses to the Whooley questions could have been an issue to not continue to screen. For example, participants may have felt that there was resistance to answering the questions and had lost confidence for fear of the patients finding the Whooley questions too confrontational. The education session could preempt these aspects towards those who are resistant to change, and ultimately touch briefly on personal biases surrounding mental health and ways in which to overcome them, so that patients can obtain equality in care. Further research into investigating attitudes within osteopaths towards referring patients to GP or mental health specialists may discover if this is a factor or not. To help with asking the Whooley questions, Beauchamp (2014) describes an alternative approach used by health practitioners when introducing the Whooley questions to their patients. Health visitors’ either, clearly explained the consequences that may arise from a positive response to the questions, sought permission to ask the questions from the patient, or used some introductory statement such as “I’m just going to ask you some questions about how you are feeling, is that OK?”. Such approaches could be beneficial to include in future education sessions. As this study only identified students’ experiences and perceptions of implementing the Whooley questions, future research could look at the patients’ experiences and perceptions of being asked the Whooley questions in an osteopathic setting. This could then help with how osteopaths can better serve their patients with mental health.

The participants who opted to change the Whooley questions to suit delivery would not be considered to be using the Whooley questions with fidelity (Mills & Ragan, 2000; Mowbray, Holter, Teague, & Bybee, 2003). An improvement to the education session would be to ensure that users did not deviate from the Whooley questions, however it is unclear how the students, who did deviate from the questions, asked the questions. Therefore, future research is needed to understand if the students’ tailoring of the questions to fit patient interactions is reasonable, and whether doing so violates the validity of the questionnaire.

**Perceived utility of the reminders**

Of the types of reminders used (A7 cards, A3 posters and screen-savers), the A7 cards were found to be the most successful and effective in helping implementing screening for depression. Participants reported that the A7 cards became a handy resource for patients to take away from the session as they had useful phone numbers. The popularity for the A7 cards could be due to the student-led clinic
operating in a paper-based environment for administration and patient notes. This could also be the reason for why the screen-savers were deemed unhelpful, especially when reception computers were only used for administrative purposes. It is possible that the use of screen-savers could work better in an environment that was more extensively computer-based, however there is little research in this domain as well, meaning it is unknown as to whether the utility of screen-savers in a clinical practice which uses computers would indeed better-influence behaviour. Finally, the A3 posters worked to invite discussion around depression screening and appeared to be helpful in encouraging peer support for implementation behaviours. It should be noted however that the student osteopathy clinic is different from most private practices given the high number of practitioners working on any one shift. The utility of the posters in this team environment cannot therefore be generalised to private practice, where it is less common to have such large practices. Specific feedback to this effect could be sought should a future study seek to apply the findings of this study in the professional clinical environment.

**Strengths, Weaknesses and Limitations**

The strength of this study was the online questionnaire which was not only cost effective but was short and easy to complete, which is an important consideration for busy practitioners who have limited time. Anonymity afforded by the online questionnaires allowed for more honest responses than face-to-face interviews may have done. Therefore, it is possible that the online nature of the questionnaires provided ease of use and being anonymous resulted in decreasing the barriers to responding, which also resulted in a perfect response rate. However, limitations in using online questionnaires could be that students misunderstood the questions or, that students may not have taken the time to provide accurate responses (Rowley, 2014). Finally, as all students attended the same student-led clinic, this clearly limits the degree to which findings here can be generalised to qualified osteopaths practicing in the private-practice environment.

Interpretive description methodology was used as an approach to inform the process of data analysis (Thorne, 2008), which appears to be a useful way to identify the students experiences and perceptions of the behaviour change intervention. It is known that utilising focus groups or face-to-face interviews improves the richness of the responses and provides an opportunity for in-depth inferences of the data (Lambert & Loiselle, 2008). Therefore, it is possible that the semi-structured questionnaires used to prevent the qualitative study becoming too big, limited students from providing enriched responses. Future research could employ face to face interviews in order to mitigate this possible lack of depth. Finally, although the principal researcher tried to ensure their own beliefs did not influence the study, the resources required the principal researcher to be the facilitator, which may have biased results (Vaughn & Baker, 2004). Therefore, future, larger studies should employ methods to mitigate this, such as using an outside lecturer.
Conclusion
An education intervention, such as the brief one-hour workshop employed in this research, is a potential solution to address the lack of education and expertise in screening for depression experienced in both osteopathy students and practicing osteopaths. The study demonstrated that student osteopaths were able to effectively use the Whooley questions and refer patients for further assessment. The reminders used within the paper-based environment were regarded as being particularly useful, with the students participating in the study suggesting the A7 cards were a reliable tool to help facilitate the administration of the Whooley questions. Further research is required to explore how the interactive activities such as role play could be incorporated into the education session and ultimately be appropriate for private practice. Interactive activities would help to ensure that the intervention described here could better fit the needs of qualified and practicing osteopaths.
References


Chapter Four: Conclusion

Bringing it all together

Depression is a serious health problem in New Zealand. There is compelling evidence to suggest that patients are likely to present to osteopaths with undiagnosed depression given the strong relationship between musculoskeletal pain and depression. However, with the lack of education and expertise, only a small number of New Zealand osteopaths report being able to identify their patient’s mood disorders, including depression (Sampath & Roy 2015, 2018). Over a six-week period, the present study evaluated the feasibility of an intervention attempting to change clinical depression screening behaviour in a group of student osteopaths. Results suggest that a short educational behaviour change intervention can influence students’ readiness to change and commitment to changing, as well as their intention to change their clinical behaviour towards identifying depression using the Whooley questions. This research has produced not only a clearer picture as to how changing depression screening behaviour may be encouraged but is also the first of its kind. Further, the results of the current research pertaining to changes in behavioural intention in a clinical context, as well as commitment to screening for depression, may have important implications for postgraduate clinical education, and possibly also for professional clinical development.

The main points arising from the quantitative research include; overall improvements in osteopathy student’s clinical behavioural intention, readiness to change and commitment to screening and finally, initial commitment toward changing depression screening behaviour. The analysis of clinical behavioural intention variables such as intention, moral norms and beliefs about consequences after the education session, were found to be changed from 5-6 out of 7 to 7 out of 7 on the Likert scale, potentially a representation of highly motivated osteopathic students. It is possible that such a ceiling effect may have masked an increase in students’ intention to screen for depression, however it appears plausible that students were well aware of a need to screen for depression but lacked the tools to do so. Indeed, the supporting qualitative data reported in this work reports subjective views consistent with such a conclusion, with students suggesting that they considered it to be valuable and desirable for osteopaths to screen for depression. In addition, qualitative data offered context to the students’ readiness to change and commitment scores. Students’ verbal feedback suggested they were strongly committed to screening for depression, willing to screen for depression and, they also perceived that screening for depression was needed.

Of all the variables measured regarding clinical behavioural intention, the cognitive factor - ‘Beliefs about Capabilities’, had the largest increase in the pre (3.7) and post (6.5) median scores. Analysis of quantitative data suggests that students’ ability and confidence in screening for depression increased after the education session. The qualitative study revealed that students felt that the education session improved their knowledge and understanding in how to screen, thus providing confidence to screen.
Importantly, students felt relieved to have direction regarding mental health. Furthermore, students found the screening tool, the Whooley questions, easy and simple to implement, which suggests a useful fit within clinical practice. Although the education session appeared to make a significantly positive and large change, the scores for individual clinical behavioural intention variables, after the six-week follow-up period, showed the scores were highest directly after the education session, and were observed to decrease over time. The results of the qualitative aspect of this work offered insight as to possible reasons for this decline. Students indicated that they believed their intention to screen declined due to their discomfort in receiving positive responses from patients and the consequent difficulties in managing these patients. Furthermore, students noted that a lack of practice applying the Whooley questions affected their confidence in screening for depression independently. They felt that a practical component to the intervention, offering the opportunity to practice the questions and exploring situations they may encounter by asking the questions with peers, such as role play, would be beneficial. Thus, future designs of the education session could lead to the development of efficient practical elements within the education session that focus more directly on role play. Role play could lead to improving individual’s confidence and abilities prior to using the Whooley questions in a real setting.

Finally, it was found that student’s readiness to change had a possible effect on the students’ resulting intention at the end of the six-weeks of clinical practice. These results highlighted that it is important to gain commitment and readiness towards adopting the new behaviour from the students early. That is, if they believe that screening for depression is important, or that they are confident that they can screen for depression, then this is likely to have a positive effect on student’s intentions to screen for depression throughout the intervention. Therefore, education should be targeted towards an individual’s beliefs and finding out what they are first, and then constructing an education session to address them, which is more tailored towards the clinical barrier’s individuals may face within a clinical setting.

**Directions for future research**

This preliminary research has offered a pragmatic approach to understanding behaviour change within student osteopaths and has delivered promising results regarding the effectiveness and feasibility of an educational behaviour change intervention. The research suggests it is feasible, at a postgraduate level, to use an educational behaviour change intervention to influence screening for depression within clinical practice. Future research should be directed towards implementing screening for depression within professional practice, incorporating the modifications suggested in this work.
Appendix A – Ethics Approval

27 July 2018

Kia ora Angela,

Re: UREC Application 2018-1041

Title: The effect of an intervention attempting to improve screening behaviour for depression by student osteopaths: A feasibility study

Thank you for making the necessary amendments to this application. Your systematic documentation of the requested amendments simplified our review.

As Primary Reader of your application and under delegated authority from the Unitec Research Ethics Committee (UREC) I now authorise you to commence your research.

Please email one copy of your final amended (accepting any track changes) ethics application and any additional documents to the UREC secretary Asher Lewis at: ethics@unitec.ac.nz. You will receive a formal letter of approval from the UREC secretary after the next UREC meeting on 15 August 2018.

In due course, please forward a copy of the Organisational Consent from Unitec to the UREC secretary for our records.

The period of approval that must be included on Participant Information Sheets and Consent Forms are:

Start date: 27 July 2018
Finish date: 27 July 2019

Please note, you must inform UREC, in advance of any ethically-relevant modification in the project as this may require additional approval.

Best wishes for your project.

Nāku noa, nā

Rob Moran
Primary Reader
Appendix B – Participant Information Form

Invitation Letter to participate in the study on behaviour change

Participant Information Sheet

Research Project Title: Improving depression screening in New Zealand student osteopaths.

Synopsis of the project

This study aims to determine whether it is feasible that a prospective educational behaviour change intervention could influence depression screening behaviour amongst a group of student osteopaths.

What we are doing

The researcher will provide an education session to the Masters of Osteopathy students on how to appropriately screen for depression in clinical practice. There will be both quantitative and qualitative methods for data gathering, with a six-week follow-up period. All collected data will be analysed by the researcher and her supervisors and will be written up as a research thesis as part of the Masters of Osteopathy course. The thesis will become part of the Unitec Commons held by the Unitec Library.

What it will mean for you

The benefit of this study to you as an osteopath, is intended to offer information and confidence regarding the clinical presentation of depression from a tailored education session. The education session will also inform you of how to support patients who express a need for help regarding the diagnosis and/or management of their depressive symptoms.

We will ask you to attend our one-hour education session on depression screening. This will be delivered during your current curriculum as part of the Clinical Osteopathy (CO) paper. The education session will teach you the epidemiology of depression, classification and recognition of depression in clinical practice. We will introduce you to a validated outcome measure: the Whooley Questionnaire to use during the clinic and, discuss the appropriate referral pathways should you identify anyone with depression and who would like help. The education session will also provide you with insight into the cultural awareness for depression in both Māori and Pasifika and provide discussion regarding suicidal patients.

In order to gather information on your progression throughout the study, you will be provided with a randomized number for anonymity and you will be asked to use this for all online documentation during the study. Prior to the education session, you will complete online (on your personal device) both a Continuing Professional Development (CPD)-Reaction Questionnaire and a Programme Commitment Questionnaire (PCQ). After the education session, we will ask you to repeat online the CPD-Reaction Questionnaire and briefly provide feedback on the education session.

Before your departure from the education session, you will be provided with an A7 reminder card and will be provided with a screen-saver to use on your personal computer. You will then conduct clinical practice for the next six weeks.
After six weeks, we will ask you to complete another online questionnaire, which incorporates both the CPD-Reaction Questionnaire and the PCQ along with some brief questions regarding your experiences and perceptions of using the Whooley questionnaire and the utility of reminders during your clinical practice.

If you agree to participate, you will be asked to sign a consent form. This does not stop you from changing your mind if you wish to withdraw from the project. However, because of our schedule, any withdrawals must be done by 5 pm the next business day, following the completion of your final online questionnaire.

All information collected from you will be stored on a password protected file. Only myself, as the researcher, and my supervisors will have access to this information.

Please contact us if you need more information about the project. At any time if you have any concerns about the research project you can contact my supervisor:

Megan McEwen, phone +64 9 8927914 or email mmcewen2@unitec.ac.nz

UREC REGISTRATION NUMBER: 2018-1041

This study has been approved by the UNITEC Research Ethics Committee from 27 July 2018 to 27 July 2019. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix C – Participant Consent Form

Participant Consent Form

Research Project Title: Improving depression screening in New Zealand student osteopaths.

I have had the research project explained to me and I have read and understood the information sheet given to me.

I understand that I do not have to be part of this research project should I choose not to participate and may withdraw by 5 pm the next business day, following the completion of the final online questionnaire.

I understand that everything I say is confidential and none of the information I give will identify me. I also understand that all the information that I give will be stored securely on a computer at Unitec for a period of 5 years.

I understand that I can request to see a copy of the finished research thesis as well as any publication that may arise as a result of the study.

I have had time to consider the information provided to me in the Participant Information Sheet and I have been provided the opportunity to have any of my questions answered.

I hereby give my consent to be a part of this project

Participant Name: …………………………………………………………………….………………

Participant Signature: ………………………….. Date: ……………………………

Project Researcher: ……………………………. Date: ……………………………

UREC REGISTRATION NUMBER: 2018-1041

This study has been approved by the UNITEC Research Ethics Committee from 27 July 2018 to 27 July 2019. If you have any complaints or reservations about the ethical conduct of this research, you may contact the Committee through the UREC Secretary (ph: 09 815-4321 ext 8551). Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.
Appendix D – Education Session

**SCREENING FOR DEPRESSION**

**Learning Objectives**
- Understand what depression is.
- Recognise how depression may impact clinical practice and outcomes.
- Learn how to use the Wholersley questionnaire effectively within clinical practice.
- Understand the role of referral pathways and support networks within clinical practice for both depression and suicide.

**Global Statistics**
- Over 300 million people of all ages, backgrounds and ethnicities experience depression and it is growing.
- Depression is the leading cause of disability.
- Depression is a major contributor towards suicide.
- Depression is currently the 4th major contributor to global burden of disease, it is predicted to be 2nd behind ischaemic heart disease in 2020.
- Depression exceeds US$1 trillion per annum.

**NZ Statistics**
- 1 to 5 people (more than 600,000 people) have been diagnosed with depression at some point in their lives.
- Depression affects women (17.5%) more than men (10.5%).
- Highest prevalence for women between ages of 35 to 44 years.
- Other vulnerable populations.
  - Post Natal Women
  - Youth
  - Māori
  - Living in the most deprived areas
  - Living in isolation such as elderly or rural communities

**NZ Statistics**
- More than 400 people per year committed suicide in NZ. 70% have a mood disorder of some description.
- Majority of suicides are male and youth and adolescents.
- Mental health costs NZ$7 billion per annum.
- Early intervention and treatment could cut this figure by up to 20%.

**What is Depression?**
- Depression is a serious mood disorder.
- Depression is chronic.
- Depression is extremely common.

**What is Depression?**
- Key Symptoms
  - Persistent sadness or low mood and/or
  - Marked loss of interests or pleasure
  - At least one of these, most days, most of the time for at least 2 weeks
- If any of these are present, GP will ask about associated symptoms:
  - Delusions
  - Hallucinations
  - Insomnia
  - Appetite changes
  - Weight loss
  - Loss of energy
  - Fatigue or loss of energy
  - Agitation or slowing of movement
  - Poor concentration or indecisiveness
  - Feelings of worthlessness, excessive or inappropriate guilt, suicidal thoughts (if ever).

**Other Factors associated with Depression**

**Medications**
- Drugs of abuse (alcohol, amphetamines, cocaine, methamphetamine, benzodiazepines)
- Antidepressant (zoloft, sertraline, paroxetine, venlafaxine, bupropion)
- Psychostimulants (amphetamines, methylphenidate, dextroamphetamine)
- Statins (pravastatin, atorvastatin, rosuvastatin, simvastatin, atorvastatin)
- Antidepressant drugs (amitriptyline, imipramine, doxepin, nortriptyline, amitriptyline, maprotiline)
- Lithium (prescribed for bipolar disorder)
- Electroconvulsive therapy
- Chemotherapy agents
- Laxatives
- Urinary anti-cholinergic agents

**Psychiatric disorders**
- Bipolar disorder
- Schizophrenia
- Obsessive-compulsive disorder
- Generalised anxiety disorder
- Panic disorder
- Social phobia
- Body dysmorphic disorder
- Eating disorders
- Alcohol or drug abuse
- Substance abuse
- Self-harm
- Suicide

**Life Situations**
- Coping with losses
- Natural disasters
- Military duty
- Child rearing difficulties
- Infertility
- Divorce
- Abuse (emotional, sexual, physical or sexual abuse)

**Things that might present to you in Clinic**
- Depression is often experienced concurrently with symptoms of:
  - Anxiety
  - Hypertension
  - Cognitive difficulties
  - Insomnia
- Chronic pain
- Diabetes mellitus Type 2
- Cardiac problems
- Inflammatory bowel syndrome
- Bronchitis

- Depression is often secondary complaint to medical conditions such as:
  - Cancer
  - Neurological impairment
  - Arthritis
  - Cardiovascular disease
**Barriers to Identifying Depression**

- Identifying Depression is complicated by:
  - Cultural barriers (language and access to healthcare, costs, transport)\(^1\)
  - Stigma\(^2\)
  - Stigma and self-stigma\(^3\)
  - Reluctance to ask for help\(^4\)
  - Up to 50% of patients with concurrent symptoms may be missed\(^5\)
  - Comprehending patient needs
  - Time and resource constraints, patient uncertainty

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**Vulnerable Populations**

- Mothers and Fathers
- Māori and Pasifika
- Youth and Adolescents

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**Postnatal Depression**

- Prepartum Depression
  - Depression which occurs during pregnancy
  - 1 in New Zealand, 1 in 10 women experience prepartum depression\(^6\)

- Postpartum (postnatal) Depression
  - Postnatal Depression affects 1 in 5 mothers (1 in 10 are at risk too)\(^7\)
  - Affects emotionally and physically debilitating and may continue for months or more
  - Depressed by "no reaction"
  - Lack of interest in the baby, not feeling bonded to the baby, or feeling very anxious about the baby
  - Insomnia (or excess or normal sleep)
  - Fear of harming the baby or oneself
  - Symptoms begin within first few weeks following delivery\(^8\)

---

**MĀORI AND PASIFIKA**

- 1 in 3 Māori adults suffer from at least one mental disorder within a 12 month period, and that may be higher for Māori women especially Māori Māori women.
- Up to 50% of Māori experience a mental health disorder during their lifetime.
- Most prevalent among Māori aged 15–44 years, less common among Māori aged 65 years and over.
- There is an unmet need for mental health services for Māori.
- Government health policy to improve Māori mental health through Treaty of Waitangi principles (partnership, participation and protection).

---

**Key Concepts when dealing with Māori**

<table>
<thead>
<tr>
<th>Recognise</th>
<th>Make</th>
<th>Acknowledge</th>
<th>Ensure</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Māori’s trust in high priority, for mental health problems and it is paramount that it be fully understood</td>
<td>Māori’s priority is to understand mental health problems and partners and their treatment</td>
<td>Māori’s priority is the treatment of mental health problems, which may differ to what is culturally appropriate</td>
<td>Care is delivered in a culturally appropriate manner</td>
<td>Partnership sets cultural health needs and what roles it shares in the mental health care system, in the patient’s and their family’s</td>
</tr>
</tbody>
</table>
Depression in Pasifika population

- 4% of Pasifika experience a mental health disorder within their lifetime.
- Higher rates of suicidal ideation (4.0%) and suicide attempts (1.2%) than the general population.
- Only 25% Pasifika who have a serious mood disorder will see a GP for mental health services compared to 55% of the general NZ Population.

Depression in Asian population

- 4% of Asian adult population experience a mental health disorder within their lifetime.
- Social isolation, language barriers, and unemployment.
- Awareness around strong stigma can delay presentation and treatment.

Youth and Adolescents Depression

- Approximately 1 in 7 young people in New Zealand will experience a major depressive disorder prior to adolescence.
- 1 in 3 experience some kind of serious mood disorder by the age of 24.
- Higher prevalence in females (1 in 4) vs males (1 in 6).
- Clinical, they may appear irritable, irritable or ‘grumpy or cross’.
- Risk: low energy, withdrawal and being ‘hard to talk’.
- They’re resistance to talk, difficulty sleeping, concentrating and making decisions.

Adolescents don’t want to seek help from health professionals

Think they can manage their own problems
They don’t think there’s anything to help
They don’t know where to get help
They are worried what people will think

Depression and Suicide

- Depression is the most powerful single risk factor for suicide.
- Death by suicide is 15-20 times more likely for youth than the general population.
- Suicide is the second leading cause of death in 15-29 year olds.
- In NZ, 455 were recorded in 2017 to suicide.
- Māori Males in 15-29 yr age group is gender.
- High rates were Māori Males especially Māori youth (32% vs 20% Non-Māori).
- Youth aged 15-19 years old (15.4 per 100,000).
- Those living in the most deprived areas (Quintile 5) are twice as likely to commit suicide than the least deprived (Quintile 1). Youth are four times as high in the most deprived areas.
- Suicide costs $420 billion per annum.

Chronic Pain and Suicide

- Physical Pain
- Patients experiencing chronic pain have elevated rates of suicidal thoughts and behaviours.
- The presence of any psychiatric disorder is strongly predictive of suicide risk in both male and females. The most powerful single risk factor, however, is depression.
- Adolescents who are depressed and suffer from multiple somatic symptoms have an increased risk of suicide.

NZ Osteopathy and Mood Disorders

- How do NZ osteopaths identify, treat and manage patients with mood disorders?
- 45% of Osteopaths often or very often encounter patients with mood disorders.
- 1 in 6 patients experiencing mental health issues (depression, anxiety, etc.) are not seen by a GP.
- High levels of depression and anxiety are often misdiagnosed.
- High levels of depression and anxiety are often misdiagnosed.
- 75% contact further information with addressing specifics of early identification and management.

DEPRESSION SCREENING

- Screening can help identify individuals at risk of depression.
- Early intervention can prevent the progression of depression.
- Screening should be a routine part of the consultation process.
Dealing with depression can be challenging, but with the right support, it’s possible to overcome any feelings of depression, hopelessness, or irritability.

**Depression Screening**
- New Zealand Guidelines for Depression and Long Term Conditions (LTBs) identify the importance of screening all adults for depression.
- Improves identification of people with undiagnosed or unrecognised depression.
- Early intervention and access to treatment by GP.
- Helps identify mild cases of depression.
- Depression screening is a simple, quick, and cheap method to improve the recognition of depression.
- Whooley Questions: a verbal outcome measure to screen for depression.

**Whooley Questions**
- **During the past month, have you been bothered by feeling down, depressed or hopeless?**
- **During the past month, have you been bothered by little interest or pleasure in doing things?**
- **Is this something that you would like help with?**

**Who should I refer too?**
- **Endeavour for depression screening** is for their General Practitioner (GP).
- The GP is further assessed by the patient and provide treatment options - whether that be counselling or medication.
- Provides help and support to individuals such as:
  - **Suicide Line:** (0800) 654 334 for counselling and support.
  - **Depression Line:** (0800) 111 777.
  - **Youthline** (Tues to Fri 11am to 1pm every day) - (0800) 37 66 33.
  - www.depression.org.nz
  - www.thinkwellness.co.nz
  - www.mindfulhealth.org.nz
- Referral Letter to GP.

**What if someone is Suicidal?**
- **Ask them:**
  - How often and when are they having suicidal thoughts?
  - Does it represent a risk?
  - Have they previously attempted suicide?
- **Attempted suicide:**
  - Attempt to recover their safety immediately by Mental Health Crisis Team on (09) 417 4174 (in Auckland) or local Mental Health Crisis Team.
  - If they are in immediate danger, do not leave them alone.
  - Keep them calm and ask them how they feel.
  - **Recurrence thoughts:**
    - Book an appointment with their GP before they leave.
  - **Teeds:**
    - (09) 647 4174 or Lifeline: (0800) 543 843.

**How often do I screen?**
- **Every time you see a NEW patient** - under psychological screening.
- **A new to you patient**
- **Returning patient within the six week period**

**Who am I referring to?**
- Depression screening is usually to their General Practitioner (GP) for further diagnosis and treatment pathways.
- Provide online or helplines before they leave.
- Suicide - Urgent: Harm to themselves or others - 111 Police or Mental Health Crisis Team - (09) 486 8900.
- Suicide - Non-urgent: Back referral to Dr with them. Follow up.

**Reminders**
- **WHOOLEY QUESTIONS**
  - During the past month, have you been bothered by feeling down, depressed or hopeless? Yes or no.
  - During the past month, have you been bothered by little interest or pleasure in doing things? Yes or no.
  - Is this something that you would like help with?
Appendix E – A7 Card

Front of A7 Card

WHOOLEY QUESTIONS

During the past month, have you been bothered by feeling down, depressed or hopeless? Yes or No

During the past month, have you often been bothered by little interest or pleasure in doing things? Yes or No

Is this something you need or want help with?

Back of A7 Card

More information and support

- Emergency – Police 111 and Security 7777
- Mental Health Services – 09 822 8501
- Suicide Crisis Helpline – 0508 828 865
- Lifeline – 0800543354
- Depression Helpline – 0800111757
- Youthline – 0800376633, text 234
- Adults - www.depression.org
- Youth - www.thelowdown.co.nz
WHOOLEY QUESTIONS

During the past month, have you been bothered by feeling down, depressed or hopeless? Yes or No

During the past month, have you often been bothered by little interest or pleasure in doing things? Yes or No

Is this something you need or want help with?
Appendix G – Whooley questions

1. During the past month, have you been bothered by feeling down, depressed or hopeless? (Yes/No)
2. During the past month, have you often been bothered by little interest or pleasure in doing things? (Yes/No)
3. Is this something you need or want help with?

Reference


Appendix H – Programme Commitment Questionnaire

1. It’s hard to take this program seriously
2. I am strongly committed to this program
3. I am willing to put forth a great deal of effort beyond what I normally do to support this program
4. It wouldn’t take much to abandon this program
5. I am convinced we need this programme in our workplace
6. The potential benefits of this programme are not worth it’s costs in time and resources

Reference

### Table 1. Summary of CPD-Reaction questionnaire scores on items and constructs.

<table>
<thead>
<tr>
<th>Construct scale</th>
<th>Items*</th>
<th>Responses choices</th>
<th>Pre-coded item value^b</th>
<th>Final item score^c</th>
<th>Score by construct^d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td>I1</td>
<td>Intend to [behavior]</td>
<td>Strongly disagree/agree</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td></td>
<td>I2</td>
<td>Plan to [behavior]</td>
<td>Strongly disagree/agree</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td>Social influence</td>
<td>I3</td>
<td>To the best of my knowledge, the percentage of my colleagues who [behavior] is . . .</td>
<td>0–20%</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>I4</td>
<td>Now think about a co-worker whom you respect as a professional. In your opinion, does he/she [behavior]?</td>
<td>Never/Always</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td></td>
<td>I5</td>
<td>Most people who are important to me in my profession [behavior]</td>
<td>Strongly disagree/agree</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td>Beliefs about capabilities</td>
<td>I6</td>
<td>I am confident that I could [behavior] if I wanted to.</td>
<td>Strongly disagree/agree</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td></td>
<td>I7</td>
<td>For me, [behavior] would be . . .</td>
<td>Extremely difficult/easy</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td></td>
<td>I8</td>
<td>I have the ability to [behavior]</td>
<td>Strongly disagree/agree</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td>Moral norm</td>
<td>I9</td>
<td>[Behavior] is the ethical thing to do.</td>
<td>Strongly disagree/agree</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td></td>
<td>I10</td>
<td>It is acceptable to [behavior]</td>
<td>Strongly disagree/agree</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td>Beliefs about consequences</td>
<td>I11</td>
<td>Overall, I think that for me [behavior] would be . . .</td>
<td>Useless/Useful</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
<tr>
<td></td>
<td>I12</td>
<td>Overall, I think that for me [behavior] would be . . .</td>
<td>Harmful/Beneficial</td>
<td>1 to 7</td>
<td>1 to 7</td>
</tr>
</tbody>
</table>

* Item number (e.g., I1 = Item 1)
^b Pre-coded item value is a Likert scale assigned value (e.g., Strongly disagree = 1, Strongly agree = 7, Never = 1, Always = 7, etc.)
^c Final item score is the score by item for each participant (possible range scale = 1 to 7)
^d Score by construct = mean score by construct (possible range scale = 1 to 7)

Note: For constructs with two items, no imputed values are possible. For constructs with three items, the raw score of the scale is missing if two or more items are missing. In the case of one missing item, the missing item is imputed from the mean of the two other items.

Reference


Appendix J – Overview of Study

Stage One
- Participant information and consent forms emailed to all students
- Programme Information emailed to Clinical Tutors and Management

Stage Two
- Pre-Education SurveyMonkey™
  - PCQ (1) and CPD-Reaction Questionnaire (1)

Stage Three
- Education Session

Stage Four
- Post-Education SurveyMonkey™
  - CPD-Reaction Questionnaire (2) and qualitative feedback on the education session

Stage Five
- Six weeks of clinical practice using Whooley questions

Stage Six
- Post-Clinical SurveyMonkey™
  - PCQ (2), CPD-Reaction Questionnaire (3) and, qualitative feedback on implementing depression screening
Appendix K – Post-Education Questionnaire

Evaluation of education session – Feedback Survey

Please answer the following questions honestly, we are very much open to any critique you may have, it’s the best way we can improve.

1. How was your overall experience of the session?

2. Was it what you expected? Why/Why not?

3. Do you feel you learnt any useful knowledge that you can utilise in clinic? If so, please explain?

4. What would you change about the session to improve it?

5. Any particular likes about the session?

6. Would you recommend this session to a colleague?
Appendix L – Post-Clinical Questionnaire

Evaluation of clinical practice – Feedback survey

Experience of Whooley

1. Can you provide an example of when you used the Whooley questions in clinical practice? (This question would help with - which aspects of the guideline seemed applicable to a specific client? and explain if you found any challenges or success with the depression screening tool?).

Experience of Reminders

2. Discuss how the reminders (screen-savers, posters and flashcards) throughout the six weeks served you in your clinical practice?

Intention

3. Did your intention to use the Whooley questions change over the course of the six weeks? Why/why not?

Beliefs about capabilities

4. Explain how much control you had over using the Whooley questions in clinical practice
5. Explain any difficulties with implementing the Whooley questions into clinical practice
6. How confident were you in using the Whooley questions?

Beliefs about consequences

7. How do you think using the Whooley questionnaire will benefit patients?
8. What is your perception of the Whooley questions being an appropriate depression screening tool in clinical practice as an osteopath?
9. Overall, will you continue to use the Whooley questions in future clinical practice? Why/Why not?

Social influences

10. Explain if other student osteopaths, tutors or patients had any influence on using the Whooley questions in clinical practice?

Education session

11. Did you find the education session relevant or compatible to clinical practice? Why/Why not?
12. Are there any additional recommendations you think would be relevant to include or remove from the education session?
<table>
<thead>
<tr>
<th>Section/Topic</th>
<th>Item No</th>
<th>Checklist item</th>
<th>Reported on page No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title and abstract</td>
<td>1a</td>
<td>Identification as a pilot or feasibility randomised trial in the title</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1b</td>
<td>Structured summary of pilot trial design, methods, results, and conclusions (for specific guidance see CONSORT abstract extension for pilot trials)</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>2a</td>
<td>Scientific background and explanation of rationale for future definitive trial, and reasons for randomised pilot trial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2b</td>
<td>Specific objectives or research questions for pilot trial</td>
<td></td>
</tr>
<tr>
<td>Methods</td>
<td>3a</td>
<td>Description of pilot trial design (such as parallel, factorial) including allocation ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>Important changes to methods after pilot trial commencement (such as eligibility criteria), with reasons</td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>4a</td>
<td>Eligibility criteria for participants</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4b</td>
<td>Settings and locations where the data were collected</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4c</td>
<td>How participants were identified and consented</td>
<td></td>
</tr>
<tr>
<td>Interventions</td>
<td>5</td>
<td>The interventions for each group with sufficient details to allow replication, including how and when they were actually administered</td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td>6a</td>
<td>Completely defined prespecified assessments or measurements to address each pilot trial objective specified in 2b, including how and when they were assessed</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6b</td>
<td>Any changes to pilot trial assessments or measurements after the pilot trial commenced, with reasons</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6c</td>
<td>If applicable, prespecified criteria used to judge whether, or how, to proceed with future definitive trial</td>
<td></td>
</tr>
<tr>
<td>Sample size</td>
<td>7a</td>
<td>Rationale for numbers in the pilot trial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7b</td>
<td>When applicable, explanation of any interim analyses and stopping guidelines</td>
<td></td>
</tr>
<tr>
<td>Randomisation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequence generation</td>
<td>8a</td>
<td>Method used to generate the random allocation sequence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8b</td>
<td>Type of randomisation(s); details of any restriction (such as blocking and block size)</td>
<td></td>
</tr>
<tr>
<td>Allocation concealment mechanism</td>
<td>9</td>
<td>Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned</td>
<td></td>
</tr>
<tr>
<td>Implementation</td>
<td>10</td>
<td>Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions</td>
<td></td>
</tr>
<tr>
<td>Blinding</td>
<td>11a</td>
<td>If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11b</td>
<td>If relevant, description of the similarity of interventions</td>
<td></td>
</tr>
<tr>
<td>Statistical methods</td>
<td>12</td>
<td>Methods used to address each pilot trial objective whether qualitative or quantitative</td>
<td></td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th>Section</th>
<th>13a</th>
<th>13b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant flow (a diagram is strongly recommended)</td>
<td>For each group, the numbers of participants who were approached and/or assessed for eligibility, randomly assigned, received intended treatment, and were assessed for each objective</td>
<td>For each group, losses and exclusions after randomisation, together with reasons</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>14a</th>
<th>14b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruitment</td>
<td>Dates defining the periods of recruitment and follow-up</td>
<td>Why the pilot trial ended or was stopped</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline data</td>
<td>A table showing baseline demographic and clinical characteristics for each group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers analysed</td>
<td>For each objective, number of participants (denominator) included in each analysis. If relevant, these numbers should be by randomised group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcomes and estimation</td>
<td>For each objective, results including expressions of uncertainty (such as 95% confidence interval) for any estimates. If relevant, these results should be by randomised group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancillary analyses</td>
<td>Results of any other analyses performed that could be used to inform the future definitive trial</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>19</th>
<th>19a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harms</td>
<td>All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)</td>
<td>If relevant, other important unintended consequences</td>
</tr>
</tbody>
</table>

## Discussion

<table>
<thead>
<tr>
<th>Section</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limitations</td>
<td>Pilot trial limitations, addressing sources of potential bias and remaining uncertainty about feasibility</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalisability</td>
<td>Generalisability (applicability) of pilot trial methods and findings to future definitive trial and other studies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>22</th>
<th>22a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation</td>
<td>Interpretation consistent with pilot trial objectives and findings, balancing potential benefits and harms, and considering other relevant evidence</td>
<td>Implications for progression from pilot to future definitive trial, including any proposed amendments</td>
</tr>
</tbody>
</table>
### Other information

<table>
<thead>
<tr>
<th>Registration</th>
<th>23</th>
<th>Registration number for pilot trial and name of trial registry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>24</td>
<td>Where the pilot trial protocol can be accessed, if available</td>
</tr>
<tr>
<td>Funding</td>
<td>25</td>
<td>Sources of funding and other support (such as supply of drugs), role of funders</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Ethical approval or approval by research review committee, confirmed with reference number</td>
</tr>
</tbody>
</table>


*We strongly recommend reading this statement in conjunction with the CONSORT 2010, extension to randomised pilot and feasibility trials, Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up to date references relevant to this checklist, see [www.consort-statement.org](http://www.consort-statement.org).
Appendix N – COREQ Checklist for reporting qualitative research.

**COREQ (COnsolidated criteria for REporting Qualitative research) Checklist**

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domain 1: Research team and reflexivity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interviewer/facilitator</td>
<td>1</td>
<td>Which author/s conducted the interview or focus group?</td>
<td></td>
</tr>
<tr>
<td>Credentials</td>
<td>2</td>
<td>What were the researcher’s credentials? E.g. PhD, MD</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>3</td>
<td>What was their occupation at the time of the study?</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>4</td>
<td>Was the researcher male or female?</td>
<td></td>
</tr>
<tr>
<td>Experience and training</td>
<td>5</td>
<td>What experience or training did the researcher have?</td>
<td></td>
</tr>
<tr>
<td><strong>Relationship with participants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship established</td>
<td>6</td>
<td>Was a relationship established prior to study commencement?</td>
<td></td>
</tr>
<tr>
<td>Participant knowledge of the interviewer</td>
<td>7</td>
<td>What did the participants know about the researcher? e.g. personal goals, reasons for doing the research</td>
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</tr>
<tr>
<td>Interviewer characteristics</td>
<td>8</td>
<td>What characteristics were reported about the interviewer/facilitator? E.g. Bias, assumptions, reasons and interests in the research topic</td>
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<tr>
<td>Domain 2: Study design</td>
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<tr>
<td><strong>Theoretical framework</strong></td>
<td></td>
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<tr>
<td>Methodological orientation and Theory</td>
<td>9</td>
<td>What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis</td>
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<tr>
<td><strong>Participant selection</strong></td>
<td></td>
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<tr>
<td>Sampling</td>
<td>10</td>
<td>How were participants selected? e.g. purposive, convenience, consecutive, snowball</td>
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<tr>
<td>Method of approach</td>
<td>11</td>
<td>How were participants approached? e.g. face-to-face, telephone, mail, email</td>
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<tr>
<td>Sample size</td>
<td>12</td>
<td>How many participants were in the study?</td>
<td></td>
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<tr>
<td>Non-participation</td>
<td>13</td>
<td>How many people refused to participate or dropped out? Reasons?</td>
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<tr>
<td><strong>Setting</strong></td>
<td></td>
<td></td>
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<tr>
<td>Setting of data collection</td>
<td>14</td>
<td>Where was the data collected? e.g. home, clinic, workplace</td>
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<tr>
<td>Presence of non-participants</td>
<td>15</td>
<td>Was anyone else present besides the participants and researchers?</td>
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<tr>
<td>Description of sample</td>
<td>16</td>
<td>What are the important characteristics of the sample? e.g. demographic data, date</td>
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<tr>
<td><strong>Data collection</strong></td>
<td></td>
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<tr>
<td>Interview guide</td>
<td>17</td>
<td>Were questions, prompts, guides provided by the authors? Was it pilot tested?</td>
<td></td>
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<tr>
<td>Repeat interviews</td>
<td>18</td>
<td>Were repeat interviews carried out? If yes, how many?</td>
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<tr>
<td>Audio/visual recording</td>
<td>19</td>
<td>Did the research use audio or visual recording to collect the data?</td>
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<tr>
<td>Field notes</td>
<td>20</td>
<td>Were field notes made during and/or after the interview or focus group?</td>
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<tr>
<td>Duration</td>
<td>21</td>
<td>What was the duration of the interviews or focus group?</td>
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<tr>
<td>Data saturation</td>
<td>22</td>
<td>Was data saturation discussed?</td>
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<tr>
<td>Transcripts returned</td>
<td>23</td>
<td>Were transcripts returned to participants for comment and/or</td>
<td></td>
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<tr>
<td>Topic</td>
<td>Item No.</td>
<td>Guide Questions/Description</td>
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<tr>
<td>Domain 3: analysis and findings</td>
<td></td>
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<tr>
<td>Data analysis</td>
<td></td>
<td></td>
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<tr>
<td>Number of data coders</td>
<td>24</td>
<td>How many data coders coded the data?</td>
<td></td>
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<tr>
<td>Description of the coding tree</td>
<td>25</td>
<td>Did authors provide a description of the coding tree?</td>
<td></td>
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<tr>
<td>Derivation of themes</td>
<td>26</td>
<td>Were themes identified in advance or derived from the data?</td>
<td></td>
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<tr>
<td>Software</td>
<td>27</td>
<td>What software, if applicable, was used to manage the data?</td>
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<tr>
<td>Participant checking</td>
<td>28</td>
<td>Did participants provide feedback on the findings?</td>
<td></td>
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<tr>
<td>Reporting</td>
<td></td>
<td></td>
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<tr>
<td>Quotations presented</td>
<td>29</td>
<td>Were participant quotations presented to illustrate the themes/findings?</td>
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<tr>
<td></td>
<td></td>
<td>Was each quotation identified? e.g. participant number</td>
<td></td>
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<tr>
<td>Data and findings consistent</td>
<td>30</td>
<td>Was there consistency between the data presented and the findings?</td>
<td></td>
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<tr>
<td>Clarity of major themes</td>
<td>31</td>
<td>Were major themes clearly presented in the findings?</td>
<td></td>
</tr>
<tr>
<td>Clarity of minor themes</td>
<td>32</td>
<td>Is there a description of diverse cases or discussion of minor themes?</td>
<td></td>
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</tbody>
</table>


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ORCID number (Optional): ..................................................

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Practice Pathway: Community Study

Degree: Master of Osteopathy

Year of presentation: 2019

Principal Supervisor: Megan McEwen

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