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Abstract

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Keywords

Fieldwork education, evidence-based practice, clinical reasoning, curriculum

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ABSTRACT

A fieldwork education model is used in occupational therapy to develop competency of professional skills, including evidence-based practice (EBP) and clinical reasoning. This quantitative study explored factors influencing implementation rates of EBP in New Zealand registered occupational therapists to better understand students' experience of evidence-based practice while on fieldwork. An online survey exploring beliefs and practices related to clinical competence, professional reasoning and EBP was conducted. The survey included questions about related beliefs, the measure of Evidence Informed Professional Thinking (EIPT; Benfield & Johnston, 2020), and the Implementation Climate Scale (ICS; Ehrhart et al., 2014). The mean scores on the scales were entered into a linear regression model and backward stepwise regression was used to build a predictive model ascertaining primary influences for EBP implementation. On the measure of EIPT respondents reported infrequent engagement in clinical reasoning and EBP activities. Scores on the ICS results indicate some support of EBP practices in respondents' workplaces. Habits of critical reflection have the strongest relationship to habits of implementing EBP in daily practice The only other factors significant in the predictive model were focus on EBP, and respondents' level of education. Habits of critical reflection on practice and clinical reasoning activities have the strongest relationship with EBP engagement. Fieldwork students are likely to observe fieldwork educators who are infrequently engaging in critical activities of reflection and EBP. Development of strategies to enhance and habitualize critical reflection and clinical reasoning will increase EBP implementation rates. Pragmatic strategies between fieldwork educators, educational institutions, and students will likely enhance students' learning and ultimately enhance overall EBPs in the profession.

Introduction

Evidence-based practice (EBP) includes the use of current best research evidence along with clinical expertise and has been identified as a critical competency and professional responsibility (Thomas et al., 2017). Competent occupational therapists are required to frequently and routinely engage in EBP activities (World Federation of Occupational Therapy, 2016). However, numerous studies report low implementation rates by all health professions, including occupational therapists (Klaic et al., 2018; Krueger et al., 2020). Various theories and strategies have been used to identify factors limiting implementation rates and to develop interventions for remediation. Two factors identified early were insufficient skills and negative attitudes about EBP (McCluskey & Lovarini, 2005). Curricula were developed to target these factors which led to documented improved skills/knowledge and more positive views of EBP (Crabtree et al., 2012; McCluskey & Lovarini, 2005; Melnyk, 2016). However, these improvements did not lead to significant changes in EBP implementation rates in clinical practice (Krueger et al., 2020; Upton et al., 2014). Importantly, there is a reported loss of EBP skills even after a brief time in fieldwork and practitioners report decreased self-confidence in performing EBP skills within five years of graduation (Crabtree et al., 2012; Klaic et al., 2018).

Reasons suggested for this decline include internal factors such as difficulty integrating the EBP process into fieldwork (Johnson et al., 2020) and external factors such as organizational structure and/or the influence of poor EBP role modeling for students on fieldwork (Upton et al., 2014; Watson et al., 2018). Given the low frequency of therapists implementing EBP tasks such as seeking, reading, and appraising literature in daily practice (Lizarondo et al., 2011), there is risk of limited opportunities for students to witness EBP when on fieldwork. Evidence-based practice influences practice through critical clinical reasoning, or the application of critical thinking to the clinical situation (Victor-Chmil, 2013). Gaining a deeper understanding of clinical reasoning and EBP habits of occupational therapists who influence occupational therapy students during fieldwork is therefore critical to ascertain remediation possibilities.

As with most health professions, occupational therapy uses an education model where curricula are divided into two components: classroom and fieldwork (American Occupational Therapy Association [AOTA], 2016). The focus of fieldwork education is for “future practitioners to achieve competence in applying the occupational therapy process and using evidence-based interventions to meet the occupational needs of a diverse client population” (AOTA, 2016, p.1). The fieldwork educator is tasked with helping the student develop their professional identity by modeling what competent and expert professionals ‘do’ in practice and by requiring that the student engage in activities which can be incorporated into an envisioned prototype of an ‘expert’ therapist (Aas & Alexanderson, 2012; Cohn et al., 2014). Thus, the culture of what it means to be, do, become, and belong to the profession of occupational therapy is demonstrated by the fieldwork educator and modeled to the students during fieldwork. This modeling assists students to develop an understanding of professional expectations regarding what therapists do in daily practice in relation to habits of engaging in clinical reasoning (CR) and EBP. A crucial purpose of fieldwork is to place students on the trajectory to

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become competent occupational therapists and establish the habits of practice that will support continued development of professional expertise (Cohn et al., 2014; Farber et al., 2008). Despite the importance of this role, fieldwork educators are not required to be certified, the level of training and support they receive varies internationally, and is generally restricted to manuals, guidelines and occasionally workshops (AOTA, 2010).

Fieldwork educators acknowledge that providing supervision to students is an opportunity to help them develop their clinical reasoning skills, however they do not identify this as an opportunity to develop EBP skills (Aas & Alexanderson, 2012). The reported low rates of routinely engaging in EBP activities and demonstrated loss of EBP skills over time (Crabtree et al., 2012; Johnson et al., 2020; Klaic et al.,2018; Upton et al., 2014) results in missed opportunities for students to witness and engage in everyday EBP activities during fieldwork and hinders their normalization of incorporating EBP into everyday practice.

Curricula are designed to support the formation of the students' professional identity through development of not only practice-based knowledge and skills but also maintenance skills for continued competence to practice throughout their career (Mylopoulos et al., 2016). Some suggest that professional identity is influenced through the dynamic interplay between the 'doing' of professional activities and diverse contexts with unique cultural and social expectations (O'Shea & McGrath, 2019). Others suggest the external factor of organizational culture is the main influence on engagement in activities (specifically EBP activities) which support maintaining competency (Melnyk, 2016). Organizational culture can be defined as norms and expectations of behavior and thinking in a specific setting and is taught to new employees as the correct way to think and act (Williams et al., 2018).

Organizational factors that support EBP implementation include providing time/access to databases; use of local mentors or experts; openness to innovations (of the organization); and explicit expectations that practitioners implement EBP activities such as developing a clinical question and seeking peer-reviewed literature (Ehrhart et al., 2014; Ehrhart et al., 2021; Melnyk, 2016; Williams et al., 2018). Ehrhart et al. (2014) theorized that those settings that emphasize, support, and explicate expectations of EBP result in better uptake of EBP than those that do not. Organizational initiatives designed to increase implementation of EBP have been shown to affect clinicians' professional identities- what they believe are the expected knowledge, values, and actions that make them a competent practitioner (Bennett et al., 2016). Therefore, ascertaining the perceptions of therapists regarding their practice context in terms of support for EBP helps clarify what their practice habits are and how they might have formed.

The purpose of this study was to gain a deeper understanding of habitual engagement of EBP and clinical reasoning activities in practicing New Zealand occupational therapists in their clinical practice. Specifically, the survey was designed to explore the associations between the factors (beliefs, organizational climate, demographic variables, and habits of clinical reasoning) to their self-reported habits of implementing

EBP. A survey was conducted which explored participants' beliefs regarding which activities are critical for the development and maintenance of clinical expertise, their perceptions of workplace support for EBP, and their self-reported frequency of performing clinical reasoning and EBP activities. It was the researchers' belief that identification of a predictive model for EBP implementation may support the identification of strategies to increase implementation of EBP activities in clinical practice. The study aim was to explore relationships between these factors to inform curricula changes and enhance the uptake of EBP. This survey was conducted in conjunction with a qualitative study exploring clinicians' perspectives on what EBP is and how it is best nurtured in students and novice practitioners (see Jeffery et al., 2020).

Method

This quantitative study utilized a cross-sectional survey distributed to participants recruited through an email announcement by the New Zealand Occupational Therapy Board to practicing occupational therapists who indicated willingness to be contacted for any research activity. Ethical approval was obtained from the researchers' academic institutional ethics review boards. Approximately 75% of the licensed therapists in New Zealand subscribe to the research listserv and receive notices. Participants used a link in the announcement to access the Qualtrics® survey and provided their informed consent through answering the first question. Qualtrics survey responses were exported to SPSS® (IBM Corp, Version 28.0.0.0).

Instruments

The survey consisted of eight demographic items including years of experience, level of education, experience as a fieldwork educator, primary work role, clinical experience in different contexts, and the school where they received their occupational therapy training. Values and beliefs regarding what contribute to developing and maintaining competence were explored using 5-point Likert scales (not important – extremely important) with 20 items exploring diversity of experience, undergraduate and postgraduate professional coursework, continuing education, reading research evidence, clinical experience, and communication with peers and clients.

The measure of Evidence Informed Professional Thinking (EIPT; Benfield & Johnston, 2020) was used to probe the frequency with which respondents carried out essential activities of critical clinical reasoning and evidence-informed practice in their everyday practice. The measure of EIPT consists of two probabilistic Guttman scales: critical clinical reasoning (CCR) and evidence-informed practice (EIP) habits. Each scale contains one Beliefs probe (five-point strongly agree-disagree Likert scale) and 15 frequency items using a 5-point Likert scale (never- always). Items on the CCR scale probe meta-cognitive thinking activities which are part of the clinical reasoning process such as critical reflection on values, beliefs and knowledge or critical reflection on experiences. The EIP habits scale consists of probes covering EBP processes such as collection and reflection on local outcomes data and seeking peer-reviewed evidence. Importantly, it also includes items which specifically explore engagement in shared decision-making with clients in specific contexts, and program evaluation (Rubin & Bellamy, 2022). The scales were developed using Rasch analysis which generates a

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keyform. A keyform enables immediate direct data collection, measurement score, and diagnostic analysis (Linacre, 1998). The responses on the items on the CCR and EIP scales were scored using the item's keyform value, ranging from zero to ten (ten indicating more engagement). Both scales report strong reliability and validity with item and person reliability of 0.99 and 0.90, respectively (Benfield & Johnston, 2020). Each scale can reliably distinguish four different levels of performance (strata) into four levels of engagement ranging from "in need of support" to "high competency" (Benfield & Johnston, 2020).

One tool developed to probe organizational climate and its relationship to EBP is the Implementation Climate Scale (ICS; Ehrhart et al., 2014). This scale explores the strategic climate of the workplace by asking respondents to report on their perception of how their employer values and supports the implementation of EBP. This scale consists of six factors: focus on EBP (prioritized), educational support for EBP (training and resources), recognition for EBP (promotion, held in high regard); rewards for EBP (bonus paid), selection for EBP (experienced in EBP), and selection for openness (flexible, adaptable). Each factor has three items allocated to it (18 items in total) and each subscale is computed by obtaining the mean score of the three items for that factor. The total score is the mean of the six subscale means. Therefore, the scores range from zero (not at all) to four (very great extent) with lower scores indicating less organizational support for EBP implementation. This tool is reliable and valid for assessing organizational climate (e.g., internal consistencies (α) = 0.81-0.91) (Ehrhart et al., 2014). Respondents were able to skip any item in the survey.

Analysis

Data from all respondents who answered sufficient items (i.e., minimum of two questions per factor on ICS and 60% of each EIPT scale) to score the measure of EIPT (which comprises CCR and EIP scales) and/or ICS were included. The Keyform Rasch logit values for CCR and EIP scales were used to obtain a mean score for each respondent on the two scales, ranging from 0-10, with higher scores indicating more engagement. The mean total score and six subscales of the ICS scale were calculated per the scoring protocol, with possible scores ranging from 0-4 and larger scores indicating more support. The respondent's EIP score was entered as criterion variable.

Their CCR, EIP, ICS (total and six factors), demographic, and belief scores were entered into linear regression. To find the best regression model for predicting habits of implementing EBP, backward stepwise elimination was used to reduce the number of predictors within the model. Each item was built into the full model, then the items were assessed for significance. The item with the least significance was eliminated from the model and the model was rerun until each predictor item was significant.

Results

One hundred therapists accessed the survey and 96 provided informed consent to participate. This represents approximately 5.6% of the therapists who subscribed to the research listserv at the time of the survey. Sixty-four respondents reported their highest occupational therapy qualification was a bachelor's degree, while 11 reported master's

degree and three were clinical doctorates or PhD degrees. Most respondents (70.8%) reported six or more years in clinical practice, while six respondents reported two years or less. Sixty-six (68.7%) respondents reported that they were clinicians, and 27 (28.1%) reported primary work roles of manager, consultants, or other leadership positions. Most respondents (64.6%) reported being a fieldwork educator, having taken at least one student during the past five years of practice. Eighty-seven (90.63%) graduated from New Zealand occupational therapy programs. Ninety-two (95.8%) completed sufficient items to score the Measure of EIPT, and 78 (81.2%) completed items required to calculate the total ICS score. Ninety-five (98.9%) respondents completed the value and belief items.

As educational programs have individualized curricula, school of matriculation was explored as a possible factor for different EBP implementation rates. This was found to not be significant in terms of their practice habits (mean EIP was t= 1.453, p =0.158), implying it had no effect on their self-report habits of EBP engagement. The person scores on the EIP scale ranged from 2.13 to 6.13 with a mean of 4.66 (SD 1.11). As interpretation of the measure of EIPT was completed on a different sample, the New Zealand sample was compared to the original instrument sample and the scores indicated that the respondents fit the population and the cut-scores are applicable (see Table 1: Mean Scores on Tools and Values/Beliefs Items).

Table 1

Mean Scores on Tools and Values/Beliefs Items

Tool	Mean (SD)	N (%)
EIP Scale (EIPT)	4.66 (1.11)	92 (95.8)
CCR (EIPT)	5.49 (1.13)	92 (95.8)
Total Implementation Climate Scale (ICS)	1.97 (0.61)	78 (81.3)
● Factor: Focus on EPB	2.60 (0.91)	80 (83.3)
● Factor: Educational Support for EBP	2.03 (1.00)	80 (83.3)
● Factor: Recognition for EBP	2.10 (0.93)	78 (81.3)
● Factor: Rewards for EBP	0.31 (0.52)	81 (84.4)
● Factor: Selection for EBP	1.69 (1.03)	81 (84.4)
● Factor: Selection for Openness	2.91 (0.86)	81 (84.4)
Values/Belief Items		
● Diversity of Experience	4.17 (0.69)	95 (99.0)
● Undergraduate Courses	3.39 (1.21)	92 (95.8)
● Graduate Courses	3.62 (0.94)	92 (95.8)
● Continuing Education	4.31 (0.75)	95 (99.0)
● Study and Reading of External Evidence and Clinical Experience	3.85 (0.95)	95 (99.0)
● Own Clinical Experience	4.43 (0.60)	95 (99.0)
● Communication with other Therapists	4.43 (0.58)	95 (99.0)
● Communication/Listening to Clients	4.62 (0.59)	95 (99.0)

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The EIP scale respondents reported more frequently engaging in clinical reasoning activities than EBP activities. Specific behaviors engaged in rarely, sometimes, and frequently are depicted in Table 2.

Table 2

Mean Scores on the EIP Scale

Frequency	Item	Logit Difficulty
Rarely (1-4 times/ month)	Tried a new standardized outcome measures with their clients	5.63
	Assisted a peer/colleague in developing a PICO/PICOT question	5.47
	Sought formal systematic reviews or meta-analysis on clinical issue	5.26
	Used outcome measures that have been used in research with the same clinical problem/diagnosis	4.93
	Formulated a clearly answerable question that defines the client problem, the intervention, the alternative intervention, and outcome(s) of interest (i.e., PICO, PICOT)	4.91
	Promoted the use of EBP to your colleagues	4.90
Sometimes (5-8 times/ month)	Chose outcome measures to use based primarily on published evidence of their reliability and validity	5.26
	Shared the results of outcome measures along with their clinical observation to discuss client progress with other professionals	5.13
	Searched an electronic database or peer reviewed journal	4.86
	Reflected on the theories used to develop the causal models and causal mechanisms of the clinical problem	4.82
	Reflected on an article that they read to integrate with prior experiences and other related peer-reviewed research	4.70
	Reflected on the outcome data (careful observations, standardized measures, work samples, etc.) that they have collected to assess the accuracy of their assumptions, identify problems, or to evaluate the impact of their intervention	4.47
	Thought about how they could incorporate measuring client outcomes into their daily routine	4.44
Frequently (9-12 times/ month)	Assessed the performance of a clearly defined behavior after a specified time	4.70
	Promoted the use of clinical reasoning to your colleagues	4.38
Strongly Agree	Prior to deciding on clinical actions, they consider various solutions	2.35

The mean score on the CCR scale was higher than the EIP score. The scores are statistically significantly different ($t= 7.807(91)$, $p < 0.001$). This score difference is consistent with the score difference reported by Benfield and Johnston (2020). These scores signify slightly higher rates of engagement in critical reflection than EBP, and slightly higher ability to complete more difficult CCR activities.

The mean total score on the ICS was 1.97 (SD=0.61), a score of two indicates moderate organizational support for EBP activities. Two respondents skipped items in the factor: Recognition for EBP. As per the protocol, the mean score for that subscale was averaged from the two remaining responses. These scores are consistent with other research which used the ICS scale to explore organizational climate (e.g., Ehrhart et al., 2014). The respondents reported no or only slight organizational support for Rewards for EBP with a mean of 0.31 (SD=0.52), indicating that organizations did not provide financial incentives, bonuses, or compensation for using EBP in their setting. They also indicated slightly lower scores for the factor Selection for Evidence-Based Practices with a mean of 1.69 (SD=1.03), indicating slight to moderate organizational support for selecting staff who use EBP practices, had formal EBP training, or selection of staff who value EBP. For Selection for Openness (e.g., adaptable, flexible, and open to new interventions), the mean score was 2.91 (SD=0.86), indicating moderate to great organizational support for these traits (see Table 3: Estimated Effects of the Factor on Habits of Engaging in Evidence-Based Practices).

The mean score on the EIP scale and CCR scale, demographic probes (e.g., diversity of experience), belief probes, and their ICS mean scores (total score and six factor mean scores) met the assumptions of linear regression. To explore the theorized effects of organizational climate and beliefs on EBP engagement, the independent variables above were entered into a single regression model. The linear regression model suggests that the habits of engaging in clinical reasoning has the strongest relationship with their habits of doing EBP activities. The backwards stepwise elimination of factors resulted in three significant predictors: CCR scores, Focus on EBP factor score, and Level of Education (see Table 3: Estimated Effects of the Factor on Habits of Engaging in Evidence-Based Practices). Critically, only two items, CCR ($\beta=0.64$, $p< 0.000$) and level of education ($\beta=0.309$, $p=0.029$) were statistically significant. All other factors were not statistically significant regarding daily engagement in EBP activities. Importantly, there was no difference between fieldwork educators and other clinicians in terms of their daily engagement in EBP activities. For this reason, all respondents were included in this analysis. The results from this predictor model were used to calculate a standardized measure of effect size, using Cohen's f^2. The estimated effect size of habits of CCR on their habits of EBP implementation is a large effect at 0.599. Organizational support for EBP (e.g., Focus on EBP) is $\beta= 0.043$, and Level of Education is $\beta= 0.068$, signifying little effect (Encyclopedia of Research Design, 2010).

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Table 3

Estimated Effects on Habits of Engaging in Evidence-Based Practices

Factor	Unstandardized β	Significance
CCR scale	0.641	0.000**
ICS total score	0.366	0.05*
Focus on EBP	0.458	0.000**
Educational Support of EBP	0.140	0.225
Recognition for EBP	0.314	0.012*
Rewards for EBP	0.084	0.703
Selection for EBP	0.138	0.207
Selection for Openness	0.193	0.140
Demographic Factors		
Level of education	0.309	0.029*
Years of experience	0.090	0.187
Being a fieldwork educator	0.490	0.301
Beliefs about what is important for developing and maintaining clinical expertise		
Diversity of experience	-0.061	0.681
Initial professional coursework	0.055	0.530
Post-professional coursework (graduate)	-0.039	0.742
Continuing education	0.048	0.757
Studying and reading external quantitative evidence and clinical research	0.251	0.141
Clinical experience	-0.376	0.088
Communication with peers/other therapists	0.07	0.690
Communication with patients	0.041	0.893
Predictor model		
CCR Score	0.669	0.000**
Focus On EBP Factor Score	0.241	0.007*
Level of Education	0.077	0.001**

*significant <0.05 **significance <0.0001

Discussion

In this study, the self-reported habits for engaging in EBP of the respondents were consistent with practice habits reported in the literature (Benfield & Johnston, 2020; Klaic et al., 2018; Krueger et al., 2020; Upton et al., 2014). Respondents reported rarely engaging in more difficult EBPs which are closer aligned to formal EBP: searching and appraising the literature and using psychometrically sound outcome tools. The average response on the EIP scale indicates these respondents were engaging in EBP activities consistent with only basic competency, due to infrequent engagement in the EBP activities considered critical for maintaining currency of skills and knowledge. Since over 65% of the respondents reported being fieldwork educators, and there was no difference in scores between fieldwork educators and non-fieldwork educators, it is therefore likely that students will have fieldwork educators with practice habits that are

consistent with a basic level of EBP competency. Fieldwork education is designed to place students on a trajectory towards becoming competent occupational therapists with habits supportive of continuing development of clinical competence (Cohn et al., 2014; Farber et al., 2008). These findings suggest that fieldwork may not support achieving this goal.

Predictor Model

For this research the model developed for anticipating habits of implementing EBP has three predictors: CCR scale score (β=0.669), factor score for Focus on EBP (β= 0.241), and Level of Education (β=0.077). This shows that when the CCR score increases by one, the habits of implementing EBP increases by 0.669. Habits of engaging in CCR have the strongest effect on engagement of EBP activities. Significantly, the predictor model suggests that increasing habits of critical examination of practice would lead to a greater corresponding increase in EBP implementation than changing organizational climate or educational attainment. This finding is consistent with other studies which reported that EBP implementation increases as professionals engage in the habitual examination of their practice through, for example, critical reflection on outcomes data, on actions and on thinking (Benfield & Johnston, 2020; Ehrhart et al., 2014; Jeffery et al., 2020; Krueger et al., 2020; Ubbink et al., 2013). This would suggest that critical reflection on practice will lead to higher engagement of EBP. Our findings support this hypothesis as respondents who report higher rates of critical reflection also report higher rates of engaging in EBP. This is also consistent with Harding and colleagues' (2014) suggestion that increasing implementation rates of EBP will require clinicians to place more value on critical examination of practice. A 'spirit of inquiry' is frequently attributed to clinical reasoning, yet it also drives the EBP process through highlighting the need to seek and appraise information from various sources to better meet specific client needs. Our predictive model indicates that increasing routine engagement in clinical reasoning activities and supporting engagement in more difficult clinical reasoning tasks may lead to increased engagement in EBP, as the more difficult clinical reasoning activities require engagement in a corresponding EBP activity. Processes that support engagement in clinical reasoning and critical reflection may increase EBP engagement, the maintenance of competency, and development of professional expertise.

Increasing Evidence-Based Practice

Given that the purpose of EBP is to inform clinical reasoning, strategies to overcome some of the barriers to the use of evidence in clinical decision making could enhance the uptake of both. One strategy is to encourage consideration of various sources of evidence to inform the decision, and to ensure that research evidence is integrated in systems and organizational practices so that the burden on individual clinicians is lessened. Jeffery et al. (2020) proposed a framework (Five Finger Framework) that includes five sources of valid evidence clinicians can consider: "(a) research evidence from literature; (b) local context/environment, resources, and culture; (c) client's expertise and perspective; (d) expertise of others; and (e) practitioners' own knowledge and experience" (p. 346). Intentionally examining each of these elements when seeking answers to the posed clinical question facilitates pragmatic use of research evidence,

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permits the use of the expertise others hold in decision making and ensures the client's perspective is kept front of mind. The EBP burden on the individual is decreased if organizations increase the extent that research evidence is used through ensuring clinical protocols and guidelines are evidence based, that expert clinicians are available to nurture use of knowledge by students and novices, and that clinicians are encouraged to expand their own knowledge and skill sets. Consideration of the evidence through the Five Finger Framework enables identification of local best practice, enhancing capacity to adapt and implement broad research findings into specific clinical situations. Use of this framework in educational institutions and encouragement of it in fieldwork provides the student with a cue to trigger breadth and depth in reasoning and has the potential for facilitating shared language and understanding of ways to identify local best practice.

Evidence-based practice implementation rates in clinical practice may also be enhanced through specifically developing collaborative processes between students, fieldwork educators, and the educational institution. Although organizational interventions used to increase EBP implementation target practicing clinicians (Melnyk, 2016), fieldwork provides a unique opportunity to change culture as students are forming their professional identities and their deliberate practice habits. However, helping students develop a vision which includes high rates of engaging in EBP activities is complicated – many of these activities are habits of thinking, which are not always observable. Pairing fieldwork learning with projects where educators, clinicians and students work together will likely increase students' development of the necessary skills and influence clinicians' preparedness to engage in EBP routinely. Fieldwork assignments that draw on both knowledge from theory about EBP and the wealth of experiential knowledge provided by clinicians (Hebert et al., 2013) will likely enhance students' motivation to engage during fieldwork and provide opportunity for them to demonstrate EBP skills. Additionally, strategies that assist fieldwork educators and demonstrate the non-observable features of clinical reasoning (their thinking), would strengthen their clinical reasoning practices and enable students to appreciate what is being thought about. These strategies include drawing decision trees, thinking aloud or writing reasoning routines and thinking steps (Delany & Golding, 2014), cognitive mapping (Daley & Torre, 2010), and deliberate discussion regarding reasoning processes. Fieldwork educators can assist students to develop their professional identity by demonstrating competent practice and eliciting the same practice habits from them (Mylopoulos et al., 2016).

Environmental Influence on Increasing Evidence-Based Practice

Theories of knowledge translation and occupational science consistently support the notion that the performance of an occupation is influenced by the context in which it is performed (Njelesani et al., 2014). Fieldwork experiences are a critical time for students to engage in elements of the EBP process which are difficult to do during didactic coursework. Only through clinical experiences can students develop evidence-based interventions with a specific client group and evaluate the outcomes. Ubbink et al. (2013) suggested it is critical for students to experience these later steps of the EBP process; and that 'doing', in situ, can change EBP students' implementation rates and

self-efficacy regarding EBP in the future. Environment and context have a profound influence on practice, strategies to enhance EBP can be integrated into workplace systems and protocols (Jeffery et al., 2020). We argue that until this happens, supervision and mentoring by fieldwork educators alone will not support the student in developing high levels of engagement in EBP. Educational institutions can facilitate a positive change through having clear expectations of students' routine engagement in and evidence of the EBP process during fieldwork, such as through written reflection on an example of implementing all steps of the EBP process, development of an evidence resource for the setting, and case study presentations that incorporate the full EBP process (Delany & Golding, 2014).

This research found that although the ICS factors "Focus on EBP" and "Educational Support" fit the predictive model, their estimated effects on EBP implementation are negligible. One reason for the low effect of organizational climate on EBP could be due to little variance in perceptions about EBP support across various contexts. Respondents reported a perception that most organizations have moderate support for implementing EBP. This was evident in responses from both low and high engagers in EBP. Importantly, this finding, consistent with others, suggests that organizational climate may not be the main driver affecting an individual's EBP implementation rates, and, instead, is a moderating variable (Powell et al., 2021; Williams et al., 2018). Why is this important? Organizational climate interventions are based on the theory that removing environmental barriers and adding environmental supports will directly lead to increased EBP implementation. However, if organizational climate is a moderating factor, the influence on EBP implementation is via a different variable, such as professional identity and personal factors. Our findings are consistent with organizational climate acting as a moderating factor. Respondents' perception of the organizational climate (e.g., amount of support for engaging in EBP) was not able to consistently predict an individual therapist's frequency of implementing EBP activities. As the same perception of organizational climate still resulted in respondents reporting different rates of implementation, one's EBP implementation rate cannot be explained without a deeper understanding of the person's belief, values, and habits of practice.

The best predictor for the rate of engagement in EBP activities was the respondents' self-report on their frequency of engaging in CRR. Harding and colleagues (2014) suggested that increasing implementation rates of EBP will require clinicians to place more value on critical examination of practice. It is also consistent with Benfield and Johnston (2020) who reported strong positive correlations between clinical reasoning activities and EBP engagement. The 18-item CCR scale was able to account for approximately 50% of the variance of the New Zealand occupational therapists' EBP implementation habits alone. This finding would suggest that supporting clinical reasoning activities is more likely to increase EBP implementation rates than enhancing organizational climate for EBP. More specifically, critical analysis of practice in the clinical reasoning process requires the use of evidence (peer-reviewed, professional experience, and client experience) to reflect on practice and assess the depth of thinking.

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Additionally, these findings add to the evidence that occupational therapy curricula should incorporate strategies that support clinical reasoning and EBP activities, rather than focusing on academic understanding of these concepts alone. The estimated effect of one's level of education about EBP on rates of implementing EBP is 0.068. This effect is consistent with other research that found EBP implementation rates by clinicians has not significantly changed despite emphasis on enhancing EBP knowledge and skills through undergraduate education (Benfield & Johnston, 2020; Crabtree et al., 2012; Krueger et al., 2020; Lindström & Bernhardsson, 2018; Thomas et al., 2017). Why is this occurring? One possible explanation is that there is a discrepancy between academic skills and practical clinical skills (Lucas Molitor & Nissen, 2020). Evidence suggests that the current design of many assignments in health professions' pre-fieldwork coursework is intended to increase knowledge and skill acquisition (Mylopoulos et al., 2016). Further, many health profession students struggle with translating the knowledge and skills embedded in coursework to fieldwork which leads to the potential for EBP not being reached (Shorey et al., 2019). Other research suggests that many of the current fieldwork assignments related to EBP do not require demonstrating research or appraisal skills (Ryan et al., 2018). Fieldwork assignments that closely align with tasks of EBP may support the development of habits of frequent engagement in EBPs (Shorey et al., 2019).

Developing Habits

Further support for designing occupational therapy curricula to enable closer links between academic components and fieldwork can be found in occupational science theory and our understanding of the interdependence of tasks, identity, and competence (Holahan, 2013). The tasks occupational therapists engage in and demonstrate to students reflect their construct of what it means to be an occupational therapist in a specific social/work environment. Habits of engagement in EBPs are influenced not only by the context, but by individuals' professional identity, their self-awareness and what they have envisioned for their future self (Ennals et al., 2015). Our findings suggest that beliefs and values alone are insufficient to sustain behavior as none of these items were significantly related to their habits of engaging in EBP. This is also consistent with extensive research in psychology and occupational science which suggests that frequent engagement of a task appears to be more reliant on the history and frequency of doing the specific task than beliefs and motivation (Gardner et al., 2019).

Occupational science and research on habits suggest that habits and beliefs dynamically interact- habits significantly affect beliefs (Hitch et al., 2014). Therefore, fieldwork education experiences that require frequent engagement in clinical reasoning and EBP activities may influence beliefs about professional identity and competence related to EBP. Fieldwork educators who demonstrate habits of instigating EBP arguably support the development of beliefs about the importance of engaging in EBP.

According to occupational science, habits of engagement are an indicator of competency (Hitch et al., 2014). Holahan (2014) stated: "habits are silent, background markers of effective doing. They do not constitute competence, but an understanding of competence is incomplete without them, particularly in relation to the centrality of

repetition in establishing quality" (p.477). In other words, competence creates the essential space for doing, being, and becoming (Hitch et al., 2014). This assumption is consistent with evidence on the development of expertise such as the work of Hastings and Rickard (2015) who found that habits of engagement in essential tasks predict a professionals' ability to become an expert and/or maintain expertise. However, others have suggested that EBP implementation increases as professionals acquire a predilection for a 'spirit of inquiry' through habitual critical examination of their practice and by valuing the need to achieve the best outcomes for their client (Ehrhart et al., 2014; Melnyk, 2014; Ubbink et al., 2013). Significantly, our findings suggest that clinicians report higher levels of engagement in clinical reasoning than EBP activities-indicating higher levels of competency. This suggests that clinicians may be more open to interventions which support their critical analysis of practice and clinical reflection on the achievement of client outcomes.

Given the importance of "doing" for development of both competence and habit formation, perhaps lack of engagement leads to the reported loss of EBP skills and confidence in early career occupational therapists. Assigned fieldwork tasks that require students to form clinical questions, identify and manage gaps in knowledge and skills, document EBPs and write critical reflections would enhance development of routines supportive of EBP. Fieldwork settings and educational institutions working together to enhance EBP activities in students would increase self-efficacy and skill in both student and fieldwork educators through mutual support and sharing knowledge. Importantly, tasks could be developed which specifically support the 'doing' activities of EBP which are difficult to address in the education setting, e.g., the application and evaluation of EBP outcomes for specific clients and settings. These steps require a deep understanding of the context and client but are not well implemented in daily practice (Krueger et al., 2020).

Limitations

This study used a convenience sample of practicing therapists in New Zealand (3.9% of currently licensed therapists). This sample may not represent the typical occupational therapist practicing in New Zealand, nor in other countries. The ICS was developed using a North American sample which may not be valid for use with therapists practicing in other countries due to cultural differences. Additionally, differences in fieldwork supervision models are not addressed in this research. Increasing the number and diversity of the respondents would be recommended.

Implications for Occupational Therapy Education

- Knowledge of and belief in the value of clinical reasoning and EBP is not enough to make it happen – establishing habits and routines for the tasks of EBP need to be overtly identified and practiced.

- Using a framework that draws together and integrates research evidence with diverse sources of evidence to inform clinical reasoning will help students and fieldwork educators make links between elements of curricula and between classroom and fieldwork learning.

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- Occupational science theory provides an innovative frame to support intentional development of curricula activities for both classroom and fieldwork to increase and habitualize the “doing” of clinical reasoning and evidence-based practice.

- Developing activities specifically for the fieldwork experience which targets the practicing of critical reflection and EBP in situ is important for development of these habits in novices and will enhance maintenance of these skills in experienced clinicians.

Conclusion

Although organizational climate for EBP and therapists’ education level are relevant, their effect on EBP implementation rates is negligible. However, habits of engagement in clinical reasoning have a strong, positive relationship with EBP implementation - as engagement in critical clinical reasoning increases, so does engagement in EBP activities. Students are influenced in their development of habits and skills by what they observe and experience on fieldwork. Students’ exposure to effective role modeling of EBP is limited by fieldwork educators not demonstrating frequent and routine engagement EBP activities.

As beliefs alone do not predict EBP implementation, occupational science’s theoretical tenants on habits provides an innovative way to explore the complexity of enhancing uptake of EBP. Developing interventions which increase the frequency of therapists’ self-initiated rates of ‘doing’ clinical reasoning (such as critical reflection on practice) is the factor most likely to increase their engagement in EBP. Equally, students’ uptake of EBP may increase through opportunities to routinely engage in EBP tasks in the classroom and on fieldwork.

Fieldwork education is designed to place students on the trajectory towards becoming competent occupational therapists with habits supportive of continuing development of clinical competence. Interventions that increase habitual engagement with CR and EBP tasks by students and by fieldwork educators will enhance lifelong learning and safe practice. Future research would be beneficial to establish the applicability of using frequency of engagement and, specifically, occupational science theory to understanding EBP implementation.

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