

Assessing constructs underpinning clinical educator engagement in physiotherapy (Part A): A scoping review of available instruments

JOANNA HARGREAVES¹

Royal Brisbane and Women's Hospital, Brisbane, Australia

CLARE PEKIN

Royal Brisbane and Women's Hospital, Brisbane, Australia

University of Queensland, Brisbane, Australia

DEANNE GANNAWAY

University of Queensland, Brisbane, Australia

SHAUN O'LEARY

Royal Brisbane and Women's Hospital, Brisbane, Australia

University of Queensland, Brisbane, Australia

Educator identity, motivation, and self-efficacy have been shown to positively impact clinical educator performance and perseverance in work-integrated learning contexts. Little is known about the impact of these constructs in the physiotherapy profession. A scoping review was conducted to identify instrument(s) to assess these constructs in physiotherapy clinical educators. Two reviewers independently screened literature published between 2002-2022. The quality of instrument measurement properties was appraised using ten COSMIN Risk of Bias criteria. The search yielded 4,976 records, of which 58 met inclusion criteria. Sixteen instruments were appraised as 'sufficient' on ≥8 COSMIN Criteria for good measurement quality. No instrument was identified that assessed all three constructs in healthcare educators, nor that could be directly applied to physiotherapy. The need for a purpose-built instrument to evaluate educator identity, motivation, self-efficacy, as well as operational factors in physiotherapists was indicated.

Keywords: Clinical educator, scoping review, identity, motivation, self-efficacy, instrument

Clinical education is a form of work-integrated learning in which healthcare students complete placements in settings dedicated to clinical care (Patton et al., 2018). In contrast to pre-clinical learning contexts, student learning in this work-integrated setting must occur within the overarching goal of providing quality patient-center care (Kilminster et al., 2007). In physiotherapy, these clinical placements are critical for readying students to enter the profession. It is through interactions within the socio-cultural structures of the clinical workplace that students' identity and functioning skills as physiotherapists are formed (Billett, 2001; Patton et al., 2013). Critical to successfully navigating this challenging transition is the role of the clinical educator, who fulfills the role of the work-integrated learning supervisor (Siggins Miller, 2012). In Australian physiotherapy, clinical placements are usually supervised by a clinical educator who is a practicing clinician employed by the healthcare service (Adams, 2011; Lo et al., 2017). These physiotherapists have a dual role in healthcare delivery and student supervision, and must therefore possess expertise in both clinical care provision and in facilitating student learning within a complex and dynamic healthcare delivery context (Bearman et al., 2013; Newstead et al., 2017, 2018).

The recruitment and retention of dedicated clinical educators in the Australian physiotherapy context is challenging (Hargreaves, Leslie, et al., 2022; Newstead et al., 2018). This is concerning as the demand upon this critical workforce is growing. For example, in Australia and New Zealand, the number of

¹ Corresponding author: Joanna Hargreaves, joanna.hargreaves@health.qld.gov.au

entry-level physiotherapy programs has increased by 155% over the last 17 years (20 programs in 2005, increased to 51 programs by 2022), with predicted continued growth (Australian Physiotherapy Council, 2022; Chipchase et al., 2018). For some physiotherapists, supervision of students is a requirement of their role description (Baldry Currens & Bithell, 2000; McMeeken, 2008). However, little is known about the factors that motivate physiotherapists to actively engage in clinical educator roles. This knowledge is required to guide targeted support and development of clinicians for effective engagement in clinical educator roles, and hence to ensure sustainability of this workforce (Schönwetter et al., 2015; Snook et al., 2021b).

In addition to local operational restraints, research to date suggests three person-related constructs that may impact participation and perseverance of physiotherapists in clinical educator roles: educator identity, motivation, and self-efficacy (Bartle & Thistlethwaite, 2014; McArthur, 2016; McCullough et al., 2015; Parsons, 2007; van Lankveld et al., 2021). These three constructs have been described in the broader healthcare education context based on their distinct underpinning theoretical frameworks. Educator *identity* is defined as the self-perception of being an educator (van Lankveld et al., 2021), and is underpinned by professional identity theory (Monrouxe, 2016). *Motivation* describes the beliefs and emotions that drive behavior, and is underpinned by self-determination theory (SDT) (Deci & Ryan, 2008). *Self-efficacy* is underpinned by social cognitive theory (SCT), and is defined as situation-specific self-confidence (Bandura, 1986, 1997). That is, the conviction that one is able to successfully perform the required behavior to produce a particular outcome in a particular context. Of these constructs, both a strong identity as a clinical educator and motivation types with high autonomy have been shown in the wider health professional education literature to increase investment in professional development as educators, increase pursuit of clinical educator roles, and protect against burnout of clinical educators (Hurst, 2010; Trautwein, 2018; van Lankveld et al., 2017, 2021). Self-efficacy has been associated with behavioral persistence, particularly when facing challenging situations (Bandura, 2006), and has been demonstrated to positively impact commitment to teaching, teaching effectiveness, and student performance outcomes (Judge & Bono, 2001).

Although several survey instruments exist in medicine and nursing to assess these person-related constructs, assessment of educator identity, motivation, and self-efficacy in physiotherapy work-integrated learning contexts is limited. In terms of educator identity, the single study that has assessed physiotherapists' educator identity indicated that physiotherapist and occupational therapist educators with less than five years of teaching experience perceived their identity primarily as 'clinician' not as an educator (Ong et al., 2019). Similarly, research conducted in a large metropolitan teaching hospital in Queensland (Australia) suggested that a lack of identity as an educator was one of the barriers to engagement in educator roles (Hargreaves, Leslie, et al., 2022). Within healthcare, research into educator professional identity formation has occurred predominantly in medicine, and/or is focused on educators in an academic faculty context rather than in work-integrated learning settings (Brown et al., 2020; Burton et al., 2013; Cain, 2018; van Lankveld et al., 2017, 2021). In terms of motivation, a sense of duty has consistently been described as a major driver of physiotherapists participating in clinical education (Newstead et al., 2023; Sevenhuysen & Haines, 2011). Formal assessment of physiotherapists' motivation for clinical education is limited to a single study which does not differentiate between types of motivation (Yoshida et al., 2020). Furthermore, the generalizability of this study is limited to comparable contexts where formal educator training is requisite for physiotherapists. No literature is currently available that assesses self-efficacy in physiotherapy clinical educators.

This paper series presents the evolution of an instrument that will enable assessment of the constructs anticipated to underpin physiotherapists' engagement in work-integrated clinical educator roles. This paper (Part A in the series) describes the necessary preliminary step of scoping the literature to map the instruments currently available for evaluating the constructs of educator identity, motivation, and self-efficacy across health professional education. The scoping review maps current practise for assessing more than one construct in a single instrument, with a view toward assessing all three constructs within a singular instrument. In addition, this review identifies appropriate instruments from which an item pool could be generated to guide construction of a purpose-built instrument for the Australian physiotherapy context (Artino et al., 2014; Gehlbach et al., 2010), which is outlined in Paper B of the series (Hargreaves et al., 2025).

METHODS

A scoping review was selected as an exploratory approach to identify and describe the available instruments assessing educator identity, motivation and self-efficacy across all healthcare professions. The research team comprised a multidisciplinary team from education, physiotherapy and psychology, and included two experts in higher education and two experts in health professions education. An *a priori* protocol was developed and registered using the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA-ScR) protocol and Joanna Briggs Institute (JBI) manual for evidence synthesis (Aromataris & Munn, 2020a; Hargreaves, O'Leary, et al., 2022; Tricco et al., 2018). A critical appraisal of instrument quality was conducted in addition to the registered protocol. Although scoping reviews do not routinely include quality appraisals, this appraisal was required to further guide future selection of instruments to contribute to an item generation pool with evidenced measurement quality (Aromataris & Munn, 2020b; Mokkink, De Vet, et al., 2018; Prinsen et al., 2018).

Eligibility Criteria

Preliminary inclusion/exclusion criteria for participants, concept, context, and evidence type were developed and iteratively revised as familiarity with the literature was obtained (Table 1) (Arksey & O'Malley, 2005; Peters et al., 2020).

TABLE 1: Eligibility criteria for participants, concept, and context.

	Inclusion	Exclusion
Participants	Focus is health professional educators for student clinical placements. Human healthcare professions of allied health, medicine and nursing.	
Concept	Includes development of a quantitative instrument that assesses clinician's identity as an educator, motivation as an educator, and/or self-efficacy as an educator	
Context	Nil restrictions	
Types of evidence sources	Peer reviewed literature: original research, synthesized finding from the literature, expert opinion, theses, grey literature. Published within the last 20 years (2002-2022)	Non-English language. Full text unable to be obtained

Studies of health professional educators in any context were included, including those not primarily clinical, as we hypothesized that the constructs would be applicable across health professional educator contexts. In this study, a 'clinical educator' was defined as a health professional who facilitates learning for students on placement in a work-integrated learning context. The terminology for such roles varies across healthcare professions, and can include 'preceptors', 'practise educators', 'facilitators', 'supervisors', or 'teachers' (Rodger et al., 2008).

A publication date range of 20 years was selected as the preliminary review of the literature indicated that health professional educator research spanned this period. Given that our research aim was to identify available instruments, studies that did not reference an instrument for assessing the constructs of educator identity, motivation, and/or self-efficacy were excluded. Non-English literature was excluded as no budget was available for translation.

Search Strategy

A three-step strategy was followed (Aromataris & Munn, 2020b). The search strategy was developed in collaboration with research librarians from healthcare and education. The strategy was then used to conduct and refine an initial title and abstract search of PubMed and Embase (Table 2). This process generated a final search strategy (Appendix A) which was then applied to six databases spanning the healthcare and education literature: PubMed, Embase, CINAHL, ERIC, ProQuest Education, and Scopus, in December 2022. Finally, cited reference searching of included citations was conducted manually.

TABLE 2: Search terms.

Concept term	Synonyms
educator	educator* tutor* instructor* teach* supervis* facilitator* preceptor*
instrument	survey* instrument* questionnaire*
clinical	clinic* health medic* nurs*
construct	identity OR self-efficacy OR motivat*

Study Selection

Search results for each database were exported into the data management program Endnote™ where duplicates and non-English articles were removed. Citations were then imported into Covidence™.

Two reviewers from different professional backgrounds (JH and CP) independently screened all titles and abstracts using the eligibility criteria (Aromataris & Munn, 2020b; Butler et al., 2021). Following removal of irrelevant citations, the full texts of all included citations were sourced and screened for eligibility by the same reviewers. The same reviewers also conducted independent appraisals of included citations until consensus was reached. No discrepancies required intervention by a third reviewer. In order to meet the iterative purpose of scoping review design, all authors corresponded throughout the process to review the search strategy and eligibility criteria. The PRISMA-ScR (Preferred Reporting Items for Systematic Scoping Reviews) guidelines were used to report the search process and ensure methodological transparency (Shamseer et al., 2015).

Data Extraction and Synthesis

A data extraction table was developed *a priori*. Two reviewers (JH and CP) independently charted 10 records, modified the table, and independently charted a further ten records until consensus on the table was reached. One reviewer (JH) charted all further records. As scoping reviews are intended to describe rather than synthesize findings, data was presented in a narrative summary with graphic presentation (Aromataris & Munn, 2020a; Shamseer et al., 2015). The following data were extracted:

- 1) For data regarding instruments currently available to assess identity, motivation and/or self-efficacy in health professional educators, the data extracted included: study aim, healthcare discipline, geographic location, construct assessed, and noted assessment of operational factors.
- 2) Data regarding the quality of the instrument, which included method of instrument construction and psychometric property testing.

Appraisal of Measurement Quality

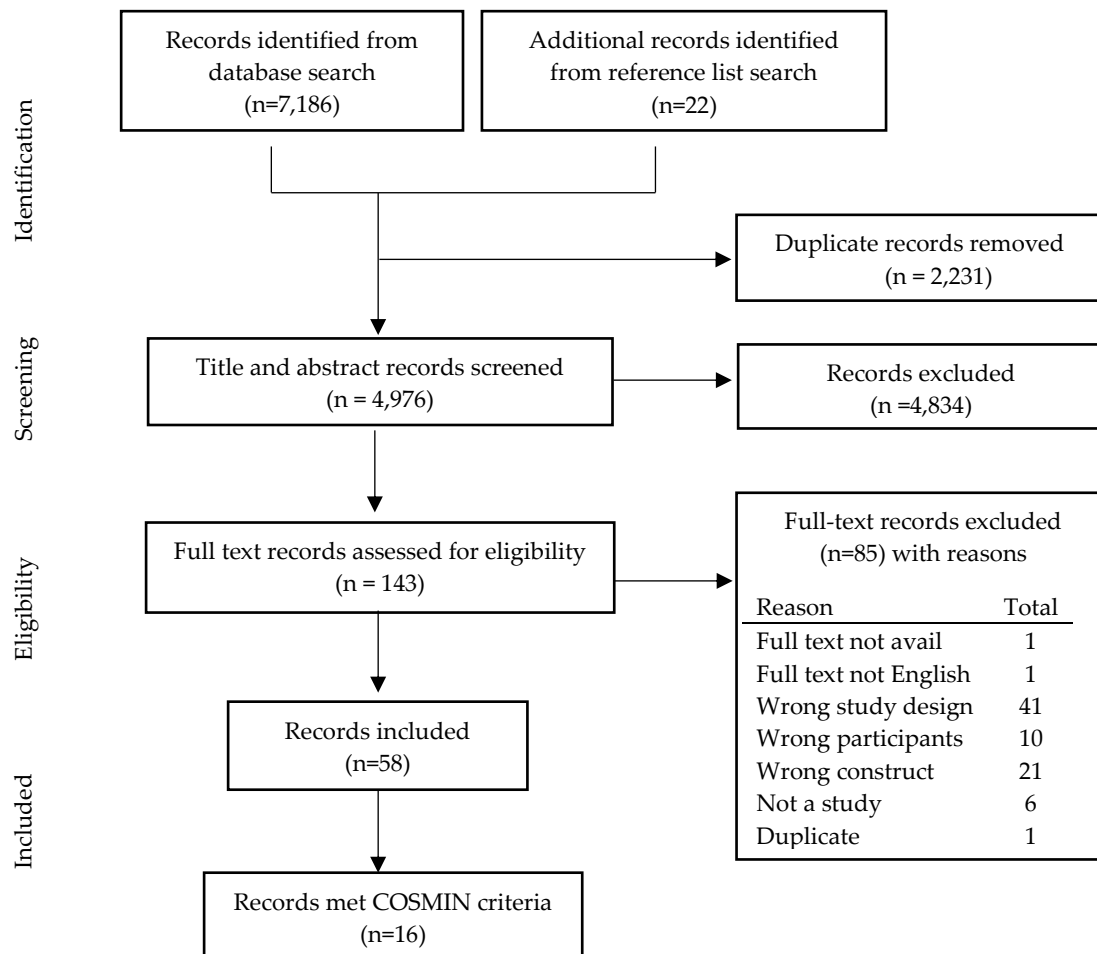
In order to guide future application of identified instruments, a critical appraisal of instrument quality was included in this scoping review. As the JBI manual for evidence synthesis does not provide guidelines for critical appraisal of measurement quality in scoping reviews, we used the JBI recommendations for systematic reviews' assessment of measurement quality (Aromataris et al., 2020). These guidelines recommend that the COSIM (Consensus-based Standards for the selection of health Measurement Instruments) 'criteria for good measurement properties' are used to assess the quality of ten criteria across three domains: (i) content validity (instrument development, design and testing), (ii) internal structure (structural validity, internal consistency, and measurement invariance), and (iii) other properties (reliability, measurement error, criterion validity, construct validity, and responsiveness) (Mokkink, Prinsen, et al., 2018). These COSMIN criteria were however designed for patient-related outcome measures and to enable meta-analyses within a systematic review. We therefore adapted the COSMIN criteria to an abbreviated version after Prinsen et al. (2018). The abbreviated version retained all ten COSMIN criteria, and used the COSMIN sub-criteria as a guide to inform ratings rather than rating all sub-criteria individually as this level of detail was not required to determine instrument quality. Following strategies suggested by Prinsen et al. (2018), each criteria received a single overall rating using the scale of 'sufficient', 'insufficient', or 'indeterminate' (Prinsen et al., 2018).

RESULTS

Overview of Study Characteristics

The search yielded 4,976 unique records following removal of duplicates, of which 58 full text records were included through the scoping process (Figure 1). As one study had two publications (Snook et al., 2019a; Snook et al., 2019b) data was extracted from the latter publication (Snook et al., 2019b), and the former publication (Snook et al., 2019a) was used to supplement missing information during the critical appraisal process.

FIGURE 1: PRISMA flow diagram illustrating scoping review screening process.



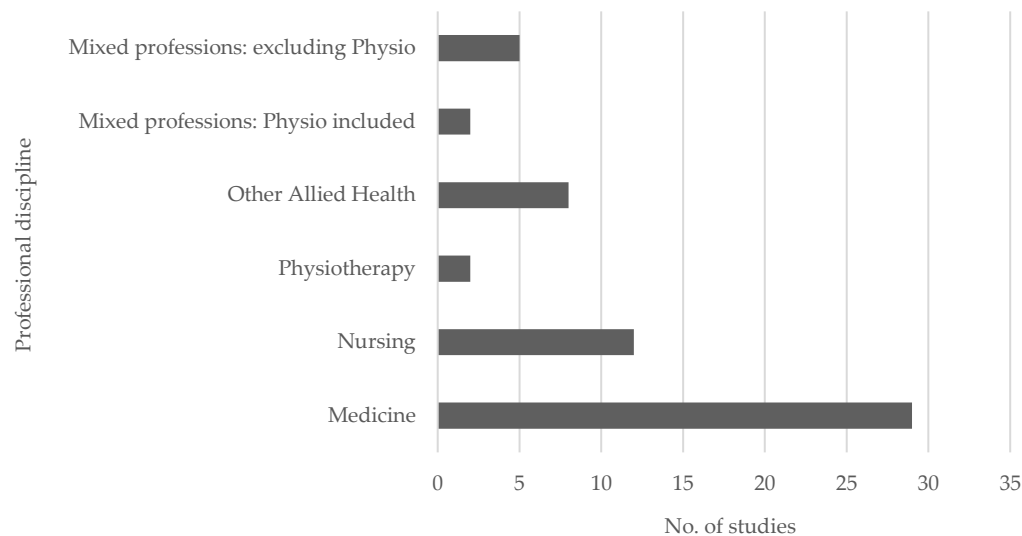
Note. From PRISMA 2020, (<https://www.prisma-statement.org/>). CC BY 4.0

Instruments Assessing Identity, Motivation, and Self-efficacy of Clinical Educators in Healthcare Professions.

Characteristics of the included records are summarized in Table 4 (Appendix B). The year of publication ranged from 2006–2022, with a general increasing trend in the number of studies published across all constructs in the last 10 years.

In terms of participants, 51 studies assessed a single healthcare discipline (Figure 2). The majority of studies were conducted in medicine (n=29), followed by nursing (n=12). Only two studies were conducted solely with physiotherapists (namely, Wilkinson et al., 2021 and Yoshida et al., 2020), with a further two studies involving physiotherapists alongside other healthcare professionals (Heale et al., 2009; Snook et al., 2019b).

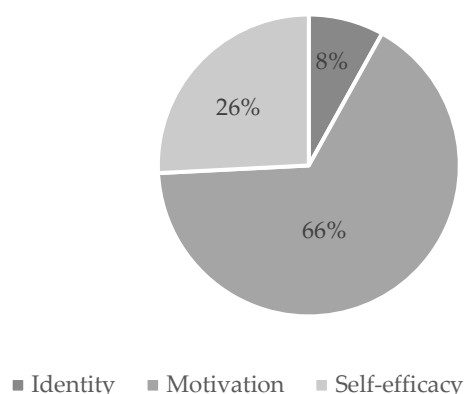
FIGURE 2: Number of studies by professional discipline.



Geographically, eight studies were conducted in Australia/New Zealand – these did not include physiotherapists. Studies involving physiotherapists were conducted in Canada (Heale et al., 2009), the USA (Wilkinson et al., 2021), Europe (Snook et al., 2019b), and Asia (Yoshida et al., 2020). Two thirds (67%) of the studies considered educators in the clinical practise context, evenly representing primary care (n=15), hospital/acute care (n=12), and mixed primary and acute care (n=17). Clinical educators practicing solely in a university context represented 22% of studies (n=13).

While several studies assessed more than one construct, motivation was the most commonly assessed construct occurring in two thirds of included studies (66%, n=41), followed by self-efficacy (n=16), with identity least represented (n=5) (Figure 3). Four studies simultaneously assessed two of the constructs under consideration in this review, and no studies addressed all three constructs. In addition, assessment of operational factors alongside the constructs under review was identified in nine of the included studies.

FIGURE 3: Percentage of studies by construct assessed.



The challenge of clinical educator workforce sustainability underpinned the development of many of the identified instruments in this review. Specific workforce issues described in the included studies were: the increasing number of health professional training programs and student cohorts (Christner et al., 2019; Latessa et al., 2008), shortage of clinical educators (Asher-Slimak et al., 2023; Bartle & McGowan, 2021; Hutchins et al., 2021; Winham et al., 2014), and the challenge of recruitment and retention of clinical educators (Asher-Slimak et al., 2023; Collins et al., 2011; Heale et al., 2009; Roberts et al., 2017; M. S. Ryan et al., 2013; Scott & Sazegar, 2006; Starr et al., 2006). Educator workforce shortages were noted to result in reducing admission to training programs (Miura et al., 2020; Wiseman, 2013), and were particularly identified in regional and primary care contexts (Adarkwah et al., 2019; Shannon et al., 2006). The specific purpose for which the available instruments were constructed included: describing factors that impact clinician's participation in clinical educator roles (Cochran Ward et al., 2013; Cooke & Farrell, 2012; Salas Medina et al., 2017), assessing incentives and barriers to participation in clinical educator roles at specific career points or geographical regions (Seo et al., 2018; Shannon et al., 2006; Verhees et al., 2021), and assessing the effectiveness of training programs for clinical educators (Bajwa et al., 2020; Dotters-Katz et al., 2016; Garner et al., 2018; Sanmartín-Fenollera et al., 2021; Snook et al., 2019b; X. V. Wu et al., 2020; Yoshida et al., 2020). The range of available study methodologies corresponded with the variability in instrument intent, and included survey development, cross-sectional workforce assessment, descriptive assessment, mixed methods, and pre-post intervention assessment.

Appraisal of Instrument Quality

Sixteen of the included studies achieved 'sufficient' in eight or more of the ten criteria specified in the COSMIN 'criteria for good measurement qualities' (Mokkink, Prinsen, et al., 2018; Prinsen et al., 2018) (Table 3). No studies involving physiotherapists achieved 'sufficient' in eight or more criteria. The constructs of self-efficacy (n=9) and motivation (n=7) were represented the most, with educator identity assessed in three studies. Only one of the studies deemed 'sufficient' was undertaken in Australia (McArthur, 2016).

TABLE 3: Studies achieving 'sufficient' quality criteria, according to location, healthcare profession, and construct assessed.

First author (year)	Location						Healthcare profession					Construct			
	Australia / NZ	USA	Canada	Europe	Asia	South America	Physiotherapy	Mixed incl PT	Medicine	Nursing	Other AHP	Mixed (no PT)	Identity	Motivation	Self-efficacy
Adarkwah (2019)				x					x					x	
Dory (2015)				x					x				x		x
Dybowski (2015)				x					x					x	x
Dybowski (2016)				x					x						x
Elster (2022)		x							x						x
Engbers (2015)				x					x					x	
Garner (2018)					x					x					x
May (2012)				x					x					x	
McArthur (2016)	x								x						x
Snook (2019a)				x					x				x	x	
Starr (2006)		x							x				x		
Verhees (2021)				x					x					x	
Weerasekara (2021)					x					x					x
Winham (2014)		x									x			x	
Wu (2022)					x					x					x
Wu (2020)					x					x					x

Shortcomings to meeting criteria for quality were commonly identified in the instrument construction phase. Only four of the studies meeting sufficiency criteria reported following specific guidelines for survey development. Of these, two studies followed the AMEE Guide for developing questionnaires in educational research (Elster et al., 2022; Snook et al., 2019b), one used Bandura's guidelines for development of self-efficacy scales (Dybowski et al., 2016), and one followed DeVellis's recommendations for scale development (Weerasekara et al., 2021). Existing instruments were appropriated in ten of the 16 studies that met criteria for quality, nine of which were modified for the new context. For example, the Work-related Basic Need Satisfaction scale (W-BNS) was used to develop the Teaching-related Basic Need Satisfaction scale (T-BNS) (Engbers et al., 2015), which in turn was further modified by Verhees et al. (2021). Other existing instruments that were modified included the Self-Efficacy Towards Teaching Inventory (SETTI) (Garner et al., 2018), and the Maastricht Clinical Teaching Questionnaire (MCTQ) (Dory et al., 2015; Elster et al., 2022; McArthur, 2016). A theoretical framework underpinning the construct(s) assessed was provided in eight of the studies that met quality sufficiency. Self-determination theory was the predominant theory appropriated in studies assessing motivation (n=3) (Dybowski & Harendza, 2015; Engbers et al., 2015; Verhees et al., 2021), and Social cognitive theory was the most commonly used framework in assessment of self-efficacy (n=3) (Dybowski et al., 2016; McArthur, 2016; Wu et al., 2022). No theoretical framework was provided for identity as an educator.

DISCUSSION

This review found that no single instrument is currently available to assess the constructs of educator identity, motivation, and self-efficacy appropriate for physiotherapy clinical educators in Australian work-integrated learning contexts. Consistent with established practise in health professional education, existing instruments were subsequently identified that could be synthesized into a new instrument appropriate for this purpose. A large number (58) of potentially relevant instruments were identified from the medical and nursing professions. Many of these instruments differed in context and content rendering them inadequate for direct or valid application to the context of Australian physiotherapy. Of the initial 58 instruments, only 16 were identified to contain the relevant constructs and were of a sufficient level of measurement quality to contribute to an item generation pool. Synthesis of these pooled items could enable development of a new instrument appropriate for use in the Australian physiotherapy clinical educator context. Findings from such an instrument would be of interest to multiple stakeholders including physiotherapy employers, health service executive management, and university partners. Further consideration of these 16 instruments provides learnings to guide development of the new instrument.

Implications for Assessing Clinical Educator Identity

The construct of identity as an educator was the least assessed construct in the identified instruments. This is interesting given that identity as an educator has been recognized in the health professional education literature as critical for the effectiveness of clinical educator roles (Irby et al., 2010). Having a strong identity as an educator as part of one's professional identity is associated with increased investment in professional development as educators, willingness to implement best practice in education, increased advocacy for clinical education, and enjoyment of teaching roles (Hurst, 2010; Trautwein, 2018; van Lankveld et al., 2017, 2021). A strong identity has also been shown to be protective for the workforce, protecting against burnout and clinicians leaving the educator role (Brown et al., 2020).

The lack of a theoretical framework for assessment of clinical educator identity noted in this review aligns with both the current lack of knowledge regarding how clinical educator identity develops (Byram et al., 2021) and the epistemic variety in approaches to identity scholarship (Cantillon et al., 2019). Regardless of approach, the tension between identities as 'clinician' and as 'educator' appears to be a consistent challenge driving current research. Theoretical frameworks used have thus included social identity theory to explore identity salience (Ong et al., 2019), social cognitive career theory to explore identity formation in clinicians on educator training pathways (Byram et al., 2021), and social-relational approaches with a focus on the hierarchical social context of healthcare provision where patient care is prioritized over teaching (Cantillon et al., 2019). Further exploration of clinical educator identity formation particularly within the clinical context of work-integrated learning is therefore required to ensure sustainability and effectiveness of the clinical educator workforce in physiotherapists.

Research to date regarding educator identity in healthcare professionals has occurred predominantly in medicine, and has focused on educators in an academic faculty context (Brown et al., 2020; Burton et al., 2013; Cain, 2018; van Lankveld et al., 2017, 2021). The need for a conversation regarding physiotherapist teacher identity that has recently been highlighted, though similarly with a focus on the academic context (Snook et al., 2021a). This trend is reflected in this review where the single instrument that included assessment of physiotherapists' clinical educator identity was designed for

educators in a university rather than a clinical care context (Snook et al., 2019b). The available literature from physiotherapy suggests that the role of 'clinical educator' is perceived as secondary to the role as 'clinician' (Hargreaves, Leslie, et al., 2022; Ong et al., 2019) - which is consistent with the broader health professional educator literature (Bartle & Thistlethwaite, 2014; Cantillon et al., 2019; van Lankveld et al., 2021). Further exploration of physiotherapist's identity as educators in work-integrated learning is therefore required. In the construction of an instrument to this end, the two studies which focussed on exploring educator identity and met sufficient quality criteria in this review are recommended for contribution to an item generation pool, namely Starr et al. (2006) and Snook et al. (2019b).

Implications for Assessing Motivation for Clinical Education

Motivation was the construct most frequently assessed in the instruments included in this review. This is unsurprising as motivation has been identified as one of the main factors (along with identity) that determines pursuing a career as an educator in medicine (Bartle & Thistlethwaite, 2014) and contributes to clinical educator recruitment and retention (Dahlstrom et al., 2005; Steinert & Macdonald, 2015). For example, a systematic review of the literature found that the vast majority of physicians undertake educator roles due to intrinsic motivators, including finding the role rewarding and enjoyable, gaining satisfaction from contributing to medical education and improving the skills and knowledge of their students (McCullough et al., 2015). The framework most commonly applied in the instruments included in this review - self-determination theory (SDT) - provides a conceptual framework for distinguishing between three types of motivation based on the level of self-regulation and autonomy involved: intrinsic motivation, extrinsic motivation, and amotivation (Deci & Ryan, 1985; Ryan & Deci, 2000). According to self-determination theory, more autonomous activities are associated with greater commitment, better performance, and increased long-term persistence (Dybowski et al., 2017; Gagné & Deci, 2005). Furthermore, self-determination theory posits that motivation types are permeable – extrinsic motifs can be internalized into one's own individual values and thus increase self-regulation. Assessing the levels of autonomy and self-regulation present in clinical educators therefore has potential value for improving healthcare professional education (ten Cate et al., 2011). In this review, two instruments assessed motivation for clinical education in physiotherapists, but neither met sufficient measurement quality nor did these instruments assess for the types of motivation described in SDT. Wilkinson et al.'s (2021) assessment of motivation for physiotherapists to participate in clinical education was limited to considering financial incentives Yoshida et al. (2020) assessed Japanese hospital physiotherapists as 'motivated' or 'unmotivated' based on two questions regarding enjoyment of and interest in clinical education (Yoshida et al., 2020). Application of this study to Australia is limited as formal educator training is requisite for physiotherapists in Japan which differs from practice in Australia.

This review additionally highlighted that, in the medical education literature, motivation is context dependent. Particularly in the hospital context, extrinsic factors relating to organization structures (such as curriculum organization, leadership, human resource development, evaluation systems, and incentives) have been shown to have a significant impact on motivation of medical educators (Dybowski & Harendza, 2014). Similarly, in the Australian physiotherapy context, recent studies have indicated both person-related and operational factors as barriers to engagement in clinical education. These factors include the perceived additional stress and burden associated with clinical educator roles in this context and the perceived low value of clinical education at the organizational level (Hargreaves, Leslie, et al., 2022; Newstead et al., 2023). The assessment of operational factors alongside motivation is therefore required when constructing a new instrument. This recommendation is supported by the inclusion of operational factors in several of the identified studies in this review. In order to capture

operational contexts across both primary care and hospital settings, the instruments developed by either Adarkwah et al. (2019) or May et al. (2012), and either Dybowski and Harendza (2015) or Engbers et al. (2015) are recommended for contribution to an item generation pool in the construction of a new instrument.

Implications for Assessing Educator Self-efficacy

Self-efficacy was assessed as a distinct construct from motivation in the included instruments. While both constructs contribute to goal pursuit and attainment (Dybowski et al., 2016), distinguishing between these constructs has been recommended for a more fully explicated understanding of human behavior (Rodgers et al., 2014). Meta-analyses in education research have demonstrated a positive and significant relationship between teacher self-efficacy and commitment to teaching, and teaching effectiveness (Chesnut & Burley, 2015; Klassen & Tze, 2014). However, little is currently known about the self-efficacy of clinical educators in the allied health professions (Vaughan, 2020). As self-efficacy is defined as situation-specific self-confidence, instruments used to assess self-efficacy must be specific to the context in question (Parsons, 2007). Bandura's social cognitive theory provides guidelines for constructing instruments assessing self-efficacy, recommending that participants rate their confidence specifically when facing difficult and specific situations (Bandura, 2006). Two of the instruments included in this review followed these guidelines, namely the Physician Teaching Self-Efficacy Questionnaire (PTSQ) (Dybowski et al., 2016), and the Self-Efficacy in Clinical Teaching scale (McArthur, 2016). For example, items in the PTSQ were developed to represent situations which medical educators typically and regularly face as described in the literature (e.g. time strain, problems with patients and patient selection, interruptions, short-term allocation of teachers to lessons or demotivated students). Items in the PTSQ therefore included items such as "Even when I feel stressed or when I am in a bad mood, I teach well," and "Even when students seem tired or demotivated I succeed in motivating them with my teaching" (Dybowski et al., 2016). Furthermore, the Self-Efficacy in Clinical Teaching scale, though developed for general medicine (McArthur, 2016), has since been applied in allied health in the Australian context to explore osteopath's self-efficacy as clinical educators (Vaughan, 2020). Of the available instruments, the instruments developed by Dybowski et al. (2016) and McArthur (2016) are therefore identified for contribution to an item generation pool in constructing a new instrument.

LIMITATIONS

A robust scoping review method has been used to establish the rigor of this review. This process included a registered *a priori* protocol, a multidisciplinary review team, and application of critical appraisal guidelines. The search strategy used intentionally limited the search to three constructs: identity, motivation, self-efficacy. Additional factors described in the literature that impact physiotherapists' participation in clinical educator roles were therefore excluded in this review. One of these additional factors highlighted in this review was operational factors. The overlap between operational factors and the constructs assessed was noted as several studies combined assessment of operational factors with one or more of the constructs. We therefore recommended that future research of the constructs of identity, motivation and self-efficacy in clinical educators considers relevant context specific operational factors. Educator competence was intentionally excluded as a stand-alone construct because our underpinning theoretical framework for motivation (Self-determination theory) incorporates competence within the construct of motivation as a component of mastery.

CONCLUSION

This review highlighted the need for a purpose-built instrument that enables assessment of the constructs that underpin physiotherapists' engagement in clinical educator roles for work-integrated learning. Sixteen existing instruments were identified which demonstrated sufficient measurement quality to contribute to an item generation pool to this end. The findings of this scoping review provide the necessary basis for the construction of a purpose-built instrument assessing educator identity, motivation and self-efficacy, which is described in Paper B of this series of papers (Hargreaves et al., 2025). Administration of such an instrument in the Australian physiotherapy context has the potential to explore the prevalence and relative impact of these constructs, and thereby guide future interventions toward the sustainability of the physiotherapy clinical educator workforce in Australia.

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APPENDIX A

BOX 1: Scoping review search strategy: PubMed search run 2/12/22.

```
((("education, medical"[MeSH Terms] OR "education"[All Fields] AND "medical"[All Fields] OR
"medical education"[All Fields] OR ("medical"[All Fields] AND "education"[All Fields]) OR
"education"[Title/Abstract] OR "teaching"[Title/Abstract]) AND ("Self-Efficacy"[Title/Abstract] OR
"Self concept"[Title/Abstract] OR "identity"[Title/Abstract] OR "motivat*"[Title/Abstract])) AND
("instrument"[Title/Abstract] OR "questionnaire"[All Fields] OR "questionnaire s"[All Fields] OR
"surveys and questionnaires"[MeSH Terms] OR ("surveys"[All Fields] AND "questionnaires"[All
Fields]) OR "surveys and questionnaires"[All Fields] OR "questionnaire"[All Fields] OR
"questionnaires"[All Fields] OR "survey s"[All Fields] OR "surveyed"[All Fields] OR "surveying"[All
Fields] OR "surveys and questionnaires"[MeSH Terms] OR ("surveys"[All Fields] AND
"questionnaires"[All Fields]) OR "surveys and questionnaires"[All Fields] OR "survey"[All Fields] OR
"surveys"[All Fields])) AND ("educator*"[Title/Abstract] OR "tutor*"[Title/Abstract] OR
"instructor*"[Title/Abstract] OR "supervisor*"[Title/Abstract] OR "facilitator*"[Title/Abstract] OR
"preceptor*"[Title/Abstract] OR "teacher*"[Title/Abstract] OR ("physician*"[Title/Abstract] AND
"medical education"[Title/Abstract] )) Filters: English, from 2002 – 2023
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APPENDIX B

TABLE 2: Characteristics of included studies.

First author (year), country	Study aims	Theoretical framework	Healthcare context	Participant characteristics	Study design	Construct(s) assessed	Critical appraisal*
AbuSabha (2018), USA	To identify clinical dietitians' perceived benefits and challenges of training dietetic interns and to determine key motivators that would entice non-preceptors to volunteer for the role	not stated	Local hospitals, outpatient clinics, and long-term care facilities	Clinical dietitians	Qualitative semi-structured interview and survey	Multiple: benefits, barriers, and motivators for preceptor role	XXXXXXIXX
Adarkwah (2019), Germany	To construct and test a new questionnaire to assess GPs motivation to participate in medical education.	not stated	primary care	GP clinicians	Instrument development, distribution and analysis	Motivation	SSSSSSSSSS
Asher-Slimak (2022), Israel	To examine factors related to clinical instructors' motivation to persevere in their role: to explore the relationship between motivation, perceived support, and intention to continue in role.	SDT	not specified	Nursing clinicians	Quantitative cross-sectional study	Multiple: motivation, support, benefit of clinical educator role, intention to continue in role	SSSSIIISII
Bajwa (2020), Switzerland	to test/compare the effectiveness of two different formats of a faculty development program (a personalized coaching versus guided self-reflection format) in terms of improving educator skills and self-efficacy as an educator	Kirkpatrick's model	University Hospital	Medical faculty: internal medicine, family medicine, paediatrics, obstetrics & gynecology, & psychiatry.	Randomised control trial	Multiple: self-efficacy, behavioral change, institutional learning climate change	XXXXXIIIII
Bartle (2021), Australia	To understand the views of clinical supervisors overseeing final year dental students and investigate their perceived role, level of support and training available, and ways to improve the supervisory experience.	not stated	Mixed: University dental clinic and community clinics	Dentists clinical educators for final year dental students on clinical placements.	Mixed methods: quantitative survey & qualitative interviews.	Multiple: training, career development, experiences of supervisors, &	XXXXXIIIII

						Cross-sectional.	function of placements	
Boyce (2022), USA	To better understand preceptors' perceived levels of support during precepting, facilitating factors, and barriers to the precepting process.	not stated	Academic medical Center	Advanced nurse practitioners & physician assistants. (Unclear if faculty or clinicians.)	Mixed-method, cross-sectional study		Multiple: barriers to precepting, support, incentives, & motivators	XXXXXXIIII
Christner (2019), USA	To investigate, assess, and describe the current trends in community-based preceptor compensation across multiple specialties.	not stated	Not clearly stated. Assumed mixed clinical and academic based on descriptors.	Medical doctors, across multiple specialties	Survey		Motivation	XXXXXXIIII
Cochran (2013), Australia and New Zealand	To identify and describe Australian emergency physicians who are currently clinical teachers, and to elicit the factors that motivate and constrain them to teach.	not stated	Emergency medicine	Senior emergency medicine physicians	Cross-sectional survey (quantitative and qualitative)		Multiple: motivators and barriers	XXXXXXIIII
Collins (2011), Australia and New Zealand	To identify the factors that influence surgeons willingness to be involved in educational activities for future surgical workforce.	not stated	Not stated	Surgeon clinician educators, across nine specialties.	Questionnaire development, distribution and analysis		Motivation	XXXXXXIIII
Cooke (2012), Australia	To explore the experiences and attitudes of all registrars employed as medical educators in regional training providers in the Australian General Practice Training program.	not stated	Primary care	GP clinician educators: registrars employed as medical educators in GP training program.	Cross-sectional descriptive survey		Motivation	XXXXXXXXXX
Doneski (2017), USA	To evaluate the self-efficacy of novice nursing and allied health educators as it pertains to the overall desire to enhance knowledge of educational practice and subsequently augment their instructional development in academics.		Social learning theory	University	Faculty: novice educators in nursing and allied health	Cross-sectional quantitative survey	Self-efficacy	XXSXSSSSX
Dory (2015), Belgium	To examine clinical educators' educational beliefs, and to estimate potential relationship of these beliefs with self-reported supervisory practice.	Fishbein's integrative model of	Primary care	Medical educators in GP training program	Cross-sectional study using Q-methodology		Self-efficacy and identity	SSSXSSSSIS

		behavior prediction					
Dotters-Katz (2016), USA	To better understand graduate medical trainees' attitudes towards teaching and motivation to teach in the clinical setting, in order to inform modifications to resident-as-teacher programmes and enhance teaching practices.	not stated	University Hospital	Registrars and fellows from graduate medical education resident-as-teacher programmes - various specialties	Q-methodology	Motivation	SSSXIIIII
Dybowski (2015), Germany	To develop and to validate an instrument measuring teaching motivations in hospital-based physicians.	SDT	University Hospital	Clinician educators (medicine)	Questionnaire development, distribution and analysis	Motivation and self-efficacy	SSSSSSSSS
Dybowski (2016), Germany	To develop and validate an instrument measuring clinical teaching self-efficacy in physicians.	SCT	University Hospital	Clinician educators (medicine)	Questionnaire development, distribution and analysis	Self-efficacy	SSSSSSSSS
Elster (2022), USA	To examine coaches' and other educators' self-efficacy, job satisfaction, and burnout, and then explore how faculty experiences contribute to these outcomes.	not stated	University	Academic medical faculty	Mixed methods, sequential explanatory design	Self-efficacy	SSSSSSSSS
Engbers (2015), The Netherlands	To what extent are policy initiatives for medical teaching related to the basic psychological needs for autonomy, competence, and relatedness in medical teaching?	SDT	University	Academic medical faculty	Questionnaire development, distribution and analysis	Motivation: autonomy, competence, relatedness	SSSSSSSSS
Garner (2018), India	To assess the impact of a simulation workshop on self-efficacy towards teaching for nurse educators in India; and to revise and validate a tool to measure self-efficacy in teaching for use with a global audience.	Bandura's theory	Nursing school	Nurse faculty	Quantitative pre-post survey design	Self-efficacy	SSSSSSSSS
Jelic (2020), Serbia	To determine the potential value of an adapted questionnaire to discover the predictors of preceptors' higher interest in precepting pharmacy interns and to evaluate preceptors' motivational factors and incentives for teaching as well as their professional satisfaction.	SCT	Cross sectional	Pharmacist clinicians	Cross-sectional	Motivation	SIIIIIIII
Heale (2009), Canada	To investigate the needs and barriers of clinical mentors in a variety of health care education programs.	not stated	Multiple: University and clinical (not specified)	Faculty advisors & clinical educators from: nursing, medicine, physiotherapy, occupational therapy, speech pathology, social work & audiology.	Descriptive design	Self-efficacy	SSIIISISS

Hutchins (2021), USA	To identify perceptions and attitudes associated with the preceptor role and incentives that might encourage precepting by current registered dietician nutritionists.	not stated	Cross sectional	Clinical dietician nutritionists	Cross-sectional (national) survey online	Motivation	SSISISIS
Ingham (2014), Australia	To explore relationship between the varying motivation of supervisors and the teaching activities they report.	Follows D. Pink	Primary care	Medical clinicians	Questionnaire-based survey	Motivation	IIIIIIII
Johnston (2022), Canada	To better understand how rural and Distributed Medical Education faculty in Canada value different forms of recognition.	not stated	University medical schools	Medical faculty	Cross-sectional national online survey	Motivation	SISSISIS
Latessa (2008), USA	To compare satisfaction of family physician preceptors with satisfaction of other primary care physicians in the fields of internal medicine, paediatrics, and obstetrics/gynecology.	not stated	Primary care	Family physicians	State wide survey	Motivation	SIIIIIII
Latessa (2007), USA	To measure satisfaction and motivation of community-based preceptors, and to examine differences between degree groups of physicians, pharmacists, advanced-practice nurses (nurse practitioners and certified nurse midwives), and physician assistants	not stated	Primary care	Physicians, pharmacists, nurse practitioners certified nurse midwives, & physician assistants	State wide survey	Motivation	SIIIIIII
May (2012), Germany	To describe a novel questionnaire that assesses the motivation of family physicians to teach undergraduates in their practices and to show the results of a subsequent survey using this instrument.	not stated	Primary care	Family physicians	Questionnaire development, distribution & analysis	Motivation	SSSSSSSS
McArthur (2016), Australia	To develop and validate a new Self-efficacy in clinical teaching (SECT) tool.	SCT	Primary care	GP clinician and clinical educators	Survey development and evaluation	Self-efficacy	SSSSSSSS
Miura (2020), USA	To develop a nurse practitioners' preceptor training program and to evaluate the program following implementation.	Bandura's theory	Not specified	Nurse practitioner clinicians	One-group pre test/post test design	Self-efficacy	SIIIIIII
O'Callaghan (2007), USA	To identify needs of physician assistant preceptors at University of New Mexico	not stated	Not specified	Physician assistant preceptors	Survey	Motivation and needs	IIIIIIII
Parsons (2006), USA	To explore the effect of a public/community health web-based preceptor education program on knowledge of the preceptor role and self-efficacy to perform in the preceptor role	SCT	Public health and community health	Nurse clinicians	Descriptive correlational research design	Self-efficacy	SISSSSSSI
Pichlhöfer (2013), Austria	To assess the influence of the presence of medical students in the teaching practice on the attitudes of both GPs and patients.	not stated	Primary care	GP clinicians	Online survey	Clinician attitude toward	SSISIIII

						student presence	
Pinheiro (2015), USA	To develop an assess the effect of the Duke mini-fellowship programs on participants' educational practices. For purpose of this ScR: Self-efficacy survey is one of the pre- and post-program assessments.	not stated	University	Medical faculty	Pre- and post-self-efficacy survey	Self-efficacy	IIIIIIII
Potter (2018), Australia	To explore the self-reported impact of an interprofessional programme known as 'Teaching on the Run' on individuals from across the health professions.	not stated	Multiple: not specified	Allied health (discipline not specified), medical, and nursing. Clinical educators & management.	Pre and post training evaluation	Confidence, motivation & effectiveness	IIIIIIII
Ren (2017), China	To explore the willingness and training needs of GP preceptors and compare the differences between preceptors from general practice and other specialties 1) To identify (a) characteristics of nurse practitioners who precept, (b) exposure and interest in innovative teaching and precepting models, (c) incentives and benefits that best support their preceptor role, and (d) interest in participating in a national nurse practitioner registry. 2) To further explore and clarify barriers, resources needed, and preferred communication methods with preceptors	SCT & SDT	Primary care	GP clinicians and preceptors	Cross-sectional survey	Motivation	SIIIIIII
Roberts (2017), USA	To evaluate the relationship between faculty intrinsic motivation, extrinsic motivation, and demographic variables and the extent of active learning use in the classroom.	not stated	not stated	Clinical nurse practitioners	Descriptive, exploratory study	Motivation	IIIIIIII
Rockich-Winston (2018), USA	To determine why some paediatric physicians volunteer to work with medical students and others do not.	SDT	University	Pharmacists, faculty.	Online survey	Motivation	SISSSIII
Ryan (2013), USA	To design and validate a questionnaire that permits determining the level of participation of nursing care professionals in mentoring nursing students during clinical practices.	not stated	Primary care	Paediatric physicians	Survey design study	Motivation	SIISIIII
Salas Medina (2017), Colombia	To provide new insight into the training needs and resources required by hospital pharmacy resident tutors in Spain, as well as into their level of motivation and satisfaction with their teaching.	not stated	Mixed: primary care and hospital.	Nurses who mentored nursing students.	Design and validation of a questionnaire	Multiple: benefits, motivation, satisfaction, and obstacles	SSSSIIII
Sanmartín-Fenollera (2021), Spain	To examine & compare the reasons that community preceptors who teach and those who do not teach give for teaching or not teaching students in their offices.	not stated	Hospital	Pharmacy resident tutors	Cross-sectional survey	Motivation and training needs	XXXXIIII
Scott (2006), Canada		not stated	Primary care	Ambulatory physicians (clinician)	Survey	Motivation	SIIIIIII

Seo (2006), South Korea	To evaluate hospital pharmacy preceptors' views of preceptorship and to explore the factors that might influence their stress and satisfaction after joining the newly implemented six-year pharmacy program in South Korea.	not stated	Hospital	Preceptors at hospital pharmacy practice	Cross-sectional (national) online survey	Motivation, competency, satisfaction	SIISIIIII
Shannon (2006), Australia	To evaluate the motivation and experiences of preceptors of health professional students in the Spencer Gulf Rural Health School (SGRHS) in South Australia.	not stated	Not stated	Preceptors from nursing, medicine & allied health	Survey	Motivation and experiences	IIIIIIIII
Sherman (2020), USA	To measure the teacher identity of incoming interns of various specialties.	not stated	Mixed: hospital and primary care	1st-year graduate medical education trainees, various specialties.	Cross-sectional, survey-based study	Identity	SIISIIIII
Snook (2019a), Iceland	To examine the extent to which perceived connectedness and received appreciation predicted identity as a medical (health care science) educator and openness to improve in tenure-track and sessional faculty members.	Systematic review linking connectedness & appreciation to educator identity	University	Faculty (sessional and tenured) at Health Sciences School	Survey	Identity	SISISSSSS
Snook (2019b), Iceland	To compare similarities and differences between sessional and tenure-track faculty across a health science school to guide faculty development for sessional faculty.	SDT	University faculty	Nursing, pharmacy, Nutrition psychology, odontology, medicine, physiotherapy, biomedical sciences & radiology	Survey development and administration	Multiple: motivation, identity, and needs assessment.	SIISIIIII
Starr (2006), USA	To conduct the initial testing of an instrument to measure the 7 elements of teacher identity in clinical educators and to consider the potential applications of such an instrument.	not stated	Mixed: primary care physicians, internal medicine, paediatrics	Physician faculty and clinicians	Survey	Teacher identity	SSISSSSSS
Van den Berg (2013), The Netherlands	To examine factors affecting the motivation for teaching in a UMC, the engagement of University Medical Centre Utrecht teaching faculty in their work, and their engagement in teaching compared with engagement in patient care and research	SDT	University	Medical faculty	Survey	Motivation	SIIIIIIII

Verhees (2021), The Netherlands	To explore teaching-related basic need satisfaction, e.g. teachers' feelings of autonomy, competence and relatedness in teaching, in different healthcare contexts and to provide insight into its relation to contextual factors.	SDT	Mixed: hospital and primary care	Physicians in university hospitals, district teaching hospitals & primary care	Online survey	Motivation	SSSSSSSSS
Wang (2018), Taiwan	To investigate the development trajectories of the commitment of preceptors and to examine the predictors between the trajectories of role commitment among nursing preceptors.	not stated	Predominantly hospital	Clinical nurses	Single-group, longitudinal, repeated-measures design	Mixed: role commitment, & organizational support	SSISIIIIIS
Weerasekara (2021), Sri Lanka	To develop and evaluate the psychometric properties of a scale that assesses the self-efficacy of nursing educators in performing their roles.	not stated	Nursing school	Faculty: nurse educators	Survey development and evaluation	Self-efficacy	SSSSSSSSSS
Wilkinson (2021), USA	To explore perspectives on the current landscape for payment of physical therapist clinical education experience.	not stated	Cross-sectional	Physiotherapy academics, clinicians, and management.	Exploratory research design	Motivation: financial incentive	SSIIIIIIII
Winham (2014), USA	To identify the perceptions and attitudes associated with the dietetic internship preceptor role, institutional support for preceptors and interns, and incentives that might encourage precepting among dietetics and nutrition professionals, and to compare responses by preceptor experience categories.	not stated	Cross-sectional	Registered dietitians and other nutrition professionals	Online survey	Multiple: motivation and operational factors	SSSSIISSSS
Wiseman (2013), USA	To determine the barriers to and motivators for providing clinical mentoring and evaluation, and to determine the need for educational preparation to facilitate their roles as clinical preceptors.	not stated	Not stated	Advanced practice nurse preceptors	Descriptive study	Multiple: operational barriers and motivation	ISIIIIIIII
Wu (2022), Taiwan	To develop an assessment instrument for the self-efficacy of clinical nursing teachers, to verify and evaluate the validity and reliability of the instrument, and to investigate the self-efficacy of clinical nursing teachers.	SCT	Nursing department of universities and colleges	Faculty: clinical nursing teachers	Descriptive cross-sectional study	Self-efficacy	SSSSSISSSS
Wu (2020), Singapore	To develop a new training program for nurse preceptors and to evaluate its effectiveness in terms of teaching competencies, self-efficacies, attitudes toward web-based learning.	not stated	Acute tertiary hospital	Nurse preceptors	Single-group prospective pretest and posttest design	Multiple: self-efficacy and competency	SSSSSISSSS
Yang (2006), Taiwan	To explore the current situation of clinical nursing teacher job self-efficacy and job involvement, and investigate the predictive nature of teachers' personal background variables on such, as well as the	Self-efficacy theory	Teaching institutes (institute of technology	Clinical nursing teachers	Cross-sectional survey	Self-efficacy	SSISSISIIIS

	relationship between self-efficacy and job involvement.			and junior colleges)				
Yoshida (2020), Japan	To identify the negative factors associated with clinical educators' motivation for clinical education.	not stated	Hospital: cross-sectional	Clinical physical therapists	Questionnaire	Motivation	IIXXXXXXX	
Zundel (2017), Germany/ Switzerland/ Austria	To evaluate how residents in paediatric surgery learn and how they teach, and their attitude toward teaching, their motivation, preparation and evaluation	not stated	Not stated - implied hospital	Paediatric surgeons - clinicians	Online questionnaire	Multiple: motivation, attitude, and evaluation	IIIXIIX	

Note. * ¹COSMIN Risk of Bias checklist for measurement quality (where S= sufficient criteria met..., X=insufficient criteria met, I=indeterminate/unable to determine whether criteria met): Criteria 1: quality of instrument development; Criteria 2: content validity; Criteria 3: structural validity; Criteria 4: internal consistency; Criteria 5: Measurement invariance; Criteria 6: reliability; Criteria 7: measurement error; Criteria 8: criterion validity; Criteria 9 construct validity; Criteria 10: responsiveness.

* ²Studies achieving sufficient on eight or more criteria highlighted



About the Journal

The International Journal of Work-Integrated Learning (IJWIL) publishes double-blind peer-reviewed original research and topical issues related to Work-Integrated Learning (WIL). IJWIL first published in 2000 under the name of Asia-Pacific Journal of Cooperative Education (APJCE).

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An educational approach involving three parties – the student, educational institution, and an external stakeholder – consisting of authentic work-focused experiences as an intentional component of the curriculum. Students learn through active engagement in purposeful work tasks, which enable the integration of theory with meaningful practice that is relevant to the students' discipline of study and/or professional development (Zegwaard et al., 2023, p. 38).*

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Research publications should contain; an introduction that describes relevant literature and sets the context of the inquiry. A detailed description and justification for the methodology employed. A description of the research findings - tabulated as appropriate, a discussion of the importance of the findings including their significance to current established literature, implications for practitioners and researchers, whilst remaining mindful of the limitations of the data, and a conclusion including recommendations.

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Reference

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