

# **The information needs of Occupational Therapy students**

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## **A case study**

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A dissertation submitted to Aberystwyth University in partial fulfilment of the requirements for the degree of MSc Information and Library Studies under Alternative Regulations.

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August 2016

## Abstract

This case study aimed to explore the information needs of Masters level Occupational Therapy (OT) students at one English university and to identify the associated factors contributing to library use and non-use. Few studies discuss the information needs of OT students, even though 31 British universities offer Occupational Therapy programmes.

One case was selected through non-probability sampling. An interpretivist, constructionist, inductive approach was employed to explore the students' perceptions of information needs within their occupational environment. A mixed methods self-completion questionnaire was administered to 27 students. The response rate was 23%. Patterns within the total data set were identified through thematic analysis and non-parametric descriptive analysis. The results were indicative and not statistically significant or generalisable.

The findings are summarised in relation to the study's three objectives:

- 1. To ascertain OT students' motivators for information-seeking** - completing academic assignments, engaging in evidence-based practice on clinical placements and developing workplace skills
- 2. To determine which information sources are used and why** - clinical colleagues, textbooks, internet search engines, e-journals and bibliographic databases
- 3. To establish the barriers inhibiting the satisfaction of information needs** - information literacy training gaps, students' lack of awareness of subscription resources, librarians' limited knowledge of OT students' role requirements and the associated differences between their information needs and those of other healthcare students, and the perceived inaccessibility and unavailability of library resources and services

Recommendations for practice included; ensuring librarians are aware of Occupational Therapy as a distinct profession, providing signage for Occupational Therapy print collections, extending library opening hours, offering regular user training (information literacy, academic writing, presentation skills), improving the availability and accessibility of Occupational Therapy-related electronic and printed resources, and targeted publicity of relevant library services and resources.

Future research should involve a collective case study to establish whether these findings are generalisable.

## **Declaration**

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed: Jane Morgan-Daniel (candidate)

Date: 12<sup>th</sup> August 2016

## **Statement one**

This work is the result of my own investigations, except where otherwise stated. Where **\*correction services** have been used, the extent and nature of the correction is clearly marked in a footnote(s).

Other sources are acknowledged (e.g. by footnotes giving explicit references).

A bibliography is appended.

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## **Statement two**

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## Abbreviations

AOTA	The American Occupational Therapy Association
BAOTCOT	British Association of Occupational Therapists and College of Occupational Therapists
BSN	Bachelor of Science in Nursing
BSc	Bachelor of Science
CASP	Critical Appraisal Skills Programme
CINAHL	Cumulative Index to Nursing and Allied Health Literature
COT	College of Occupational Therapists
E-books	Electronic books
E-journals	Electronic journals
E-resources	Electronic resources
EBP	Evidence-Based Practice
EMBASE	Excerpta Medica Database
ERIC	Educational Resources Information Center
IL	Information Literacy
INA	Information Needs Analysis
IR	Information Retrieval
ISP	Information Search Process
LISA	Library and Information Science Abstracts
MSc	Master of Science
NHS	National Health Service
NSPOT	National Society for the Promotion of Occupational Therapy
OT(s)	Occupational Therapist(s)
PICO	Population, issue, context or comparison and outcome
RCT	Randomised Controlled Trial
SCONUL	The Society of College, National and University Libraries
UCISA	Universities and Colleges Information Systems Association

## **Acknowledgements**

I would like to thank the following people for contributing to this dissertation whose advice, support and encouragement was greatly appreciated:

Hugh Preston, Senior Lecturer and Dissertation Supervisor (Aberystwyth University)

The faculty and students at Institution A for their participation

Neal Thurley, Mentor (Bodleian Health Care Libraries)

Liz Osborne (Bodleian Health Care Libraries)

All of the staff at the Bodleian Health Care Libraries

Sarah Brooks

Ashley Morgan-Daniel, Wife

# **1. Introduction**

## **1.1 External environment**

The ability to respond innovatively to external change has become increasingly important for British higher education libraries. The economic downturn and recovery period has led to budget cuts, reduced purchasing power, and efficiency and accountability pressures (JISC, SCONUL, & UCISA, 2009, p. 17). Conversely, the expectations of many library users have heightened due to increased tuition fees, the online information market, social media applications and mobile technologies (Nicholas & Herman, 2009, p. 14). Within university healthcare schools changing teaching practices have also influenced library usage as professional bodies place renewed emphasis on the achievement of specific learning objectives (College of Occupational Therapists, 2014, p. 1).

Many information professionals advocate information needs assessment as a means to ensure that stakeholders continue to perceive libraries as relevant within the context of such challenges. A potential approach proposed by Dorner, Gorman and Calvert (2015, p. 2) is to integrate findings from information needs analyses (INA) into the strategic planning process. This is reflected in Nicholas and Herman's (2009, p. 4) assertion that needs assessments provide an opportunity for libraries to make informed decisions about strategic priorities, through enabling a user-oriented and evidence-based approach to service development.

## **1.2 Purpose and justification**

There are many studies relating to the information needs of healthcare students and professionals. A small number exist about Occupational Therapists (OTs) but few discuss Occupational Therapy (OT) students specifically. The purpose of this investigation is to explore the information needs of OT students and to identify the associated factors contributing to library use and non-use.

This topic is timely because Occupational Therapy courses have become increasingly oversubscribed (Andalo & College of Occupational Therapists, 2015). There has been improved government support for student OTs, largely due to a report issued by the Department of Health in 2008 (Riley, Whitcombe, & Vincent). The report identified Occupational Therapy services as a cost-effective and sustainable solution to the challenges

posed to health and social care services by Britain's ageing population (a high quality OT workforce would help patients maintain independence for longer) (Riley et al., 2008, p. 7). This finding was further substantiated in 2012 (Finlay, p. 2) through a Department of Health report recommending a strategic framework for the education of allied health professionals (including OTs). In support of the Government's aim "to improve people's health outcomes", the strategy's purpose was to further "the development of a dynamic and innovative world-class workforce that actively seeks out the best evidence" (Finlay, 2012, p. 2). Thirty-one British universities now offer accredited Occupational Therapy programmes; undergraduate tuition fees are paid by the Government, and the National Health Service (NHS) offers bursaries for postgraduate students (College of Occupational Therapists, 2015b, p. 6 & p. 10).

The College of Occupational Therapists (COT) is the professional body responsible for the accreditation of British pre-registration courses (College of Occupational Therapists, 2014, p. 1). Its updated standards specify a number of desired outcomes for Occupational Therapy programmes, including that all universities "support the development of professionals committed to practising in an evidence-informed manner" (College of Occupational Therapists, 2014, p. 3). Through a greater understanding of student OTs' information needs, libraries should be better placed to support the missions of their parent institutions in relation to these standards.

This study therefore focuses on how libraries can support OT students' learning and evidence-based research skills in preparation for clinical practice. It explores the information needs of OT students from one COT accredited university in England and considers how these needs contribute to library use and non-use.

### **1.3 Research question, aim and objectives**

#### **1.3.1 Research question**

What are the information needs of Occupational Therapy students and how do these needs contribute to library use and non-use?

#### **1.3.2 Aim**

To explore the information needs of Occupational Therapy students and to identify the associated factors contributing to library use and non-use.

### 1.3.3 Objectives

- To ascertain OT students' motivators for information-seeking
- To determine which information sources are used and why
- To establish the barriers inhibiting the satisfaction of information needs

### 1.4 Scope

The literature review (Chapter Two) provides an account of past and current theoretical and methodological approaches to information needs research (1967-2015), in relation to studies on healthcare students, OTs and student OTs published between 2004 and 2015. Although this investigation is located within a research tradition that relates information needs to models of information-seeking and information behaviour, information needs is its primary focus.

Within this study information need is not viewed as a static concept, but as a subjective product of an individual's demographic background (age, cultural heritage, socioeconomic group and educational level), personality (cognitive processes and emotions) and occupation (profession, specialisation, career stage, organisational culture and tasks) (Case, 2007, p. 246; Dorner et al., 2015, pp. 24-45; Nicholas & Herman, 2009, pp. 112-116). An information need is context dependent, relating to missing information that is required to meet a desired goal within a particular work or social setting (Case, 2007, p. 69). Assessing the information needs of a target group is therefore an exploratory process, through which data is collected and analysed to determine solutions to identified information gaps (Dorner et al., 2015, pp. 7-9).

Within this context the most appropriate definition of information need is:

*“a value judgement that a particular client group...has an information-related problem requiring a solution in order to fulfil a necessary, useful and defensible purpose”* (Dorner et al., 2015, p. 8).

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This investigation adopts a user-centred approach and focuses on occupation as the primary variable. The term occupation refers to profession (student), specialisation (Occupational Therapy), career stage (Masters level), pattern of learning (full-time and distance learning due to clinical placements), organisational culture (shared assumptions, values and beliefs),

and tasks (the specific demands placed on students during their course of study) (Case, 2007, p. 246; Dorner et al., 2015, pp. 24-45; Nicholas & Herman, 2009, pp. 112-116).

### **1.5 Definition of Occupational Therapy**

The philosophical and theoretical basis of Occupational Therapy is extremely diverse; its founders were affiliated with a number of professions including art, nursing, psychiatry and social services (Duncan, 2012, p. 4 & p. 20). Practitioners promote maximum cognitive and physical function through selecting therapeutic activities that are perceived as meaningful by each patient within their own environmental context (Turner, Foster, Johnson, Richards, & Foster, 2002, pp. 8-10). The central tenets are:

- *“that occupation is a natural state and is linked to health*
  - *that people should be treated as individuals*
  - *that occupation should be used as a therapeutic agent”* (Turner et al., 2002, p. 8)
- 

Occupational Therapy interventions are evidence-based, client-centred and context-dependent. They address occupational dysfunction (the “inability to engage in the roles, relationships and occupations expected of a person of comparable age and sex within a particular culture”) through the following methods; psychological (cognitive behavioural therapies), psychodynamic (resolving subconscious conflict through creative and outdoor therapies), humanistic (self-actualisation through counselling and positive reinforcement), physical (bio-mechanical (remedial exercise programmes), compensatory (adapting the physical environment)), and rehabilitative (activities of daily living, remedial activities, work simulation and graded programmes) (Duncan, 2012, p. 5; Polglase & Treseder, 2012, pp. 81-85).

The COT’s definitions of occupation and Occupational Therapy are used during this study because this research has been undertaken with reference to the COT’s learning and development standards for pre-registration Occupational Therapy courses (College of Occupational Therapists, 2014, pp. 9-19). Additionally, these definitions refer to core principles and processes, while also acknowledging the subjective and contextual nature of Occupational Therapy practice:

*““Occupation” refers to practical and purposeful activities that allow people to live independently and have a sense of identity. This could be essential day-to-day tasks such as self-care, work or leisure”*

*“Occupational therapy provides practical support to enable people to facilitate recovery and overcome any barriers that prevent them from doing the activities (occupations) that matter to them” (College of Occupational Therapists, 2015a, p. 2)*

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## **1.6 Methodology**

One institutional case (Institution A) was selected through non-probability sampling (purposive, snowball). The unit of analysis was Masters level OT students (both library users and non-users). An interpretivist, constructionist, inductive approach was employed alongside a mixed methods research design to explore the students' perceptions of information needs within their occupational environment. The research instrument was a self-completion questionnaire with open and closed questions. Patterns within the total data set were identified through thematic analysis and non-parametric descriptive statistical analysis. A complete account of the methodology is provided in Chapter Three. The results, discussion and conclusion are located in Chapters Four, Five and Six respectively.

## 2. Literature review

### 2.1 Introduction

This chapter reviews the existing literature on the subject of information needs in relation to Occupational Therapy. Chapter 2.2 provides an account of the literature search (research question formulation, search strategy and source evaluation). Information needs models are addressed in Chapter 2.3 and studies concerning the information needs of healthcare students, OTs and OT students are examined in Chapter 2.4. The literature review concludes with research recommendations in Chapter 2.5.

### 2.2 Literature search

#### 2.2.1 Research question formulation

The PICO question format was used to develop an answerable research question and to guide the search strategy (Aveyard & Sharp, 2009, pp. 81-82; Fineout-Overholt & Johnston, 2005, pp. 157-159). Within the context of the research question PICO refers to *population*, *issue*, *context* or *comparison* and *outcome* (Aveyard & Sharp, 2009, pp. 81-82).

**Table 1: PICO question format**

<b>Research question</b>	<b>What are the information needs of OT students and how do these needs contribute to library use and non-use?</b>
<b>P (population)</b>	Full-time OT students (undergraduate and postgraduate)
<b>I (issue)</b>	Information needs Related concepts: information behaviour, information-seeking, information literacy (IL), information skills, information retrieval (IR), learning styles, communication preferences, evidence-based practice (EBP)
	Perceptions, experience, coping, confidence, emotions
<b>C (context/comparison)</b>	Context: academic library and information services
	Comparison: healthcare students, qualified OTs
<b>O (outcome)</b>	Service use and non-use, service improvement, service evaluation and provision, impact, quality, decision-making, strategic planning



### **2.2.2 Search strategy**

Introductory books on Occupational Therapy practice were read for background information. Information needs models were then consulted. Subsequently, the central concepts in the research question were mapped (Hart, 1998, p. 34). Search terms (appendix A) were identified from the concept map and the PICO question table (Fineout-Overholt & Johnston, 2005, p. 158; Hart, 1998, p. 34).

The literature search was conducted through CINAHL, EMBASE, ERIC, LISA and MEDLINE. These bibliographic databases were selected because they provide indexes to healthcare, education and information science-related citations (Booth & Brice, 2004, p. 40; Gray, 2009, p. 105; Thomas, 2009, p. 32). Each database has a unique subject perspective and date range (appendix B). In terms of the research question, they provided comprehensive coverage when searched simultaneously.

A subject search was conducted on each database using a combination of controlled vocabulary descriptors (where available), free-text terms and phrases (Booth & Brice, 2004, pp. 92-94). Common word stems were truncated and wildcards were inserted to retrieve plurals and spelling variations (Cronin, Ryan, & Coughlan, 2008, p. 39; Pickard, 2007, p. 27). The terms were combined with Boolean operators to refine the initial results (Cronin et al., 2008, p. 39; Gray, 2009, p. 103). Due to the dynamic nature of healthcare and OT practice a publication date limit of 2004-2015 was imposed. English language and abstract available filters were also applied. To ensure a wide scope, no geographic or methodological search filters were employed (Bryman, 2008, p. 86; Fineout-Overholt & Johnston, 2005, p. 158). The comparison element of the PICO question produced over 1,500 results. To improve the precision of this result set, comparison terms were limited to title only and qualitative study indicators such as “perception\*” or “experience\*” were excluded from the search. The individual search strategies are located in appendix C.

The results totalled approximately 400. This number was considered manageable, so keywords from the outcome aspect of the PICO question were not used to narrow the search. The abstracts were read to establish relevance to the research question. Finally, snowball searching took place through which seminal works referred to in a number of the articles were retrieved (Booth & Brice, 2004, p. 95; Cronin et al., 2008, p. 39).

### **2.2.3 Source evaluation**

Creswell's (2012, p. 92) priority system was used to categorise the literature by extent of external review; peer-reviewed journal articles were considered the highest form of evidence and opinion pieces the lowest (appendix D). The approach recommended by the Critical Appraisal Skills Programme (CASP) was then followed (CASP, 2013b). First, the articles were divided by methodology (systematic review, randomised controlled trial, qualitative study, cohort study or case-control study) (CASP, 2013a). The appropriate CASP checklist was then consulted to determine the validity of each article's results and relevance to the dissertation's scope (appendix E). This involved judging whether each study had been suitably designed and implemented in relation to its research objectives and conclusions (Gray, 2009, p. 116).

### **2.2.4 Literature review objectives**

A thematic and chronological review of the literature was undertaken with the following objectives (Bryman, 2008, pp. 174-175; Gray, 2009, p. 183; Hart, 1998, pp. 186-187):

- To summarise the chief theoretical and methodological approaches to information needs research (1967-2015)
- To locate this study's methodology within the information needs research tradition
- To evaluate the literature relating to the information needs of healthcare students, OTs and OT students (2004-2015)
- To demonstrate that a literature gap exists regarding the information needs of OT students

## **2.3 Information needs models**

### **2.3.1 Information needs research traditions**

Within information needs literature a distinction can be made between systems-oriented theory and the user-centred approach (Case, 2007, p. 246). The purpose of the following summary is to locate this study within these research traditions, providing contextual justification for the methodology (Chapter Three).

Although elements of systems theory influence the methodology, this study's approach to information needs assessment is primarily drawn from the work of Dervin and Nilan (1986),

Kuhlthau (1991), Nicholas and Herman (2009), Case (2007) and Dorner, Gorman and Calvert (2015). These authors operate from within a research tradition that regards information needs as dynamic, subjective and contextual.

### **2.3.2 Systems-oriented theory**

Early conceptual frameworks emphasised the fixed nature of information needs because “aboutness” was believed to be objectively determined (Case, 2007, pp. 76-77; Choo, 2005, p. 31; Maron, 1977). Information need was defined as a rational decision that a particular piece of information is required to solve a problem (Case, 2007, pp. 76-77). Efficient IR systems were therefore perceived to be the most effective means of meeting user needs. The following works are summarised within appendix F: (Allen & Gerstberger, 1967; Belkin, 1980; Brittain, 1970; Line, 1969; Line, Brittain, & Cranmer, 1971; Paisley, 1968; Wilson, 1981). They reflect an objective world view, are system-centred, and focus on the development of services to simplify information access (Case, 2007, p. 76; Choo, 2005, p. 31).

### **2.3.3 The user-centred approach**

#### **2.3.3.1 Dervin and Nilan (1986)**

The evolution from theories of fixed information needs to user-centred models was facilitated by the Situation-Gap-Use framework. Dervin and Nilan (1986, p. 7) rejected the traditional paradigm and called for the centrality of user-defined information needs and uses. They advocated inductive reasoning and qualitative research designs to explore how users construct information needs within specific situations (Dervin & Nilan, 1986, pp. 14-16). Their sense-making process is described in appendix G.

The strengths of the model in relation to this study’s methodology are that information needs were viewed as contextual, that situational variables were used as predictors of needs, and that needs were qualitatively examined from the users’ perspectives.

#### **2.3.3.2 Kuhlthau (1991)**

Kuhlthau (1991, p. 361) incorporated the sense-making theory into a user-centred model of the information search process (ISP). The ISP was defined as a user’s “constructive activity of finding meaning from information in order to extend his or her state of knowledge” (Kuhlthau, 1991, p. 361). The goal was the resolution of an information need, or in Dervin’s

terms, successful sense-making within the context of an individual's personal frame of reference (Kuhlthau, 1991, p. 361). The ISP is summarised in appendix G.

Points of note include Kuhlthau's assertion that information needs are dependent on the stage of the search process, that expressions of need are influenced by affective (mood, attitude, motivation) as well as cognitive processes, and that an individual's emotional state directly impacts information use. Kuhlthau's methodology is also a key consideration, as perceptions of need were analysed from an interpretivist, constructionist and inductive standpoint.

#### **2.3.3.3 Nicholas and Herman (2000, updated 2009)**

Nicholas and Herman (p. 9) proposed a new model for the digital era in 2009, in opposition to the predominant view that information needs could be precisely discerned from information-seeking behaviour. Of particular relevance is the discussion of the impact of work role (job tasks, time in post, seniority, and solitary or team-based) on users' perceptions of need (Nicholas & Herman, 2009, pp. 112-116). Work role was believed to impact the following; what material is considered relevant, source intelligibility, when satisficing occurs, cost (time, financial or penalties for information absence) versus benefits (intended use), availability and accessibility (information literacy levels, barriers to library use, or use of informal information networks). The information needs evaluative framework is described in appendix G.

The framework's value in relation to this investigation is its interpretivist and constructionist user-centred approach, its focus on needs (as opposed to information-seeking behaviour), and its in-depth analysis of the contextual factors affecting needs.

#### **2.3.3.4 Case (2007)**

Case (2007, p. 14 & 246) discerned several variables that were said to impact needs and information-seeking behaviour; occupation (profession, work role), demographic background (socioeconomic group, identity, community) and social role. Due to the scope of this dissertation, occupation is of particular importance in terms of its influence on information needs. Students were defined as "those enrolled in formal classes of study" and were said to fall within occupation as a category (Case, 2007, p. 286). Bridging these variables were a number of themes through which contextual patterns were identified. The contextual variability of these themes are of direct relevance to this dissertation; common motivators

(work tasks, decision-making, problem-solving, goal obtainment, uncertainty reduction, current awareness), factors relating to the prioritisation of needs (perceived urgency, whether the task is mandatory or not, stage of the research project, organisational environment), and barriers to location or comprehension (information overload, negative perceptions of the information provider or source, knowledge base of the user, subjectivity of meaning, and source quality, availability or accessibility) (Case, 2007, pp. 22-136).

### **2.3.3.5 Dorner, Gorman and Calvert (2015)**

Dorner et al. (2015, pp. 5-7) emphasised the subjective nature of INA, suggesting that needs are hybridised products of users' perceptions and the interpretations of information professionals. As such, the INA process involved "making value judgements regarding solutions to an information-related problem faced by a client group" (Dorner et al., 2015, p. 10). Information needs were therefore said to vary by client group and context (Dorner et al., 2015, pp. 4-8 & p. 23). Context was believed to encompass the demands of employment, study or social and cultural activities (Dorner et al., 2015, pp. 24-45). The following contextual variables were identified; demography, organisational divisions (academic discipline), culture (learning styles, communication traits, shared values, behavioural norms), typical roles and tasks, and the desired benefits of information use (Dorner et al., 2015, pp. 25-37).

This study's methodology refers to Dorner et al.'s (2015, pp. 55-76) recommendations for the service receiver (level one) INA, in which preconceived solutions to client groups' needs are discouraged, the research is conducted without reference to current systems or policies, internal validity and reliability are the chief methodological concerns, mixed methods data collection is used to minimise bias, and data analysis is inductive.

## **2.4 Thematic analysis of information needs literature**

### **2.4.1 Division of literature by user groups**

Following source evaluation and filtering (2.2.3), the information needs literature relating to healthcare students (nursing, medical, social work, allied health), qualified OTs and OT students was divided by user group. It was then analysed thematically by the occupational variables said to impact the information needs of these user groups. Three overarching themes were identified in relation to the aim (1.3.2) and objectives (1.3.3); motivators for

information-seeking, preferred information resources and barriers inhibiting the satisfaction of information needs. A number of smaller themes and subthemes were also discerned.

#### **2.4.2 Motivators for information-seeking (overarching theme 1)**

As noted by the following theorists, the occupational environment significantly influences motivators for information-seeking in terms of the associated tasks, goals, role requirements and organisational culture (Allen & Gerstberger, 1967; Belkin, 1980, p. 137; Case, 2007, p. 286; Dorner et al., 2015, pp. 25-37; Foster & Urquhart, 2012, pp. 789-795; Kuhlthau, 1991, pp. 366-368; Nicholas & Herman, 2009, pp. 112-134; Wilson, 1981, p. 8). Three occupation-related motivators for information-seeking were identified within the selected information needs literature; academic assignments, EBP on clinical placement and workplace skills. These were comprised of subthemes which varied by user group.

##### **Academic assignments**

Written and verbal academic assignments were an information-seeking motivator for nursing, social work, medical and OT students. The surveyed literature suggested that specific tasks prompted different types of information needs. The most common information requirements in relation to academic assignments for nursing, social work and medical students were; background information on diseases and conditions (symptoms, diagnosis, prognosis), intervention evidence, medical terminology, writing proficiency resources, and procedural and anatomical images. OT students' needs reportedly differed slightly due to the emphasis placed on client-centred practice and occupation-based interventions. Unlike the other user groups, OT students required anecdotal intervention evidence, health literacy resources, and materials to aid practitioner-client communication.

**Table 2: Written academic assignments**

<b>Written academic assignments</b>			
<b>User group</b>	<b>Task</b>	<b>Information needed to complete task</b>	<b>Reference</b>
Nursing students	Patient care plan	<ul style="list-style-type: none"> <li>• Background information on diseases</li> <li>• Lay descriptions of conditions for patient education</li> <li>• Intervention evidence</li> </ul>	(Saimbert, 2005, pp. 42-51)
	Evidence-based health needs analysis	<ul style="list-style-type: none"> <li>• Statistics on disease incidence and prevalence</li> </ul>	(Gannon-Leary, Walton, Cader, Derbyshire, & Smith, 2006, p. 250 & p. 260)
	Unspecified	<ul style="list-style-type: none"> <li>• Writing proficiency resources (referencing, essay structuring)</li> </ul>	(Hanson Diehl, 2007, pp. 202-203)
	Health promotion project	<ul style="list-style-type: none"> <li>• Persuasive writing techniques</li> <li>• Evidence on the prevalence, prevention and management of diseases</li> </ul>	(McMillan & Raines, 2011, pp. 697-698)
Social work students	Research proposal	<ul style="list-style-type: none"> <li>• Texts on formulating research questions, critical appraisal, research methods and citing references</li> </ul>	(Silfen & Zgoda, 2008, p. 108)
Pre-clinical medical students	Unspecified	<ul style="list-style-type: none"> <li>• Medical terminology</li> <li>• Disease symptoms, differential diagnosis</li> <li>• Drug interactions</li> <li>• Treatment guidelines</li> <li>• Anatomical images</li> </ul>	(Whipple, Richwine, Kaneshiro, & Brahmi, 2009, p. 181 & p. 183)
	Unspecified	<ul style="list-style-type: none"> <li>• Medical terminology</li> </ul>	(Brennan et al., 2014, pp. 209-210)
Clinical medical students	Unspecified	<ul style="list-style-type: none"> <li>• Procedural images and diagrams</li> </ul>	(Brennan et al., 2014, pp. 209-210)
OT students	Intervention plan	<ul style="list-style-type: none"> <li>• Physical and cognitive clinical presentation</li> <li>• Intervention evidence</li> <li>• Prognosis in terms of client goals</li> </ul>	(Villeneuve & Maranda, 2005, pp. 17-19)

**Table 3: Verbal academic assignments**

<b>Verbal academic assignments</b>			
<b>User group</b>	<b>Task</b>	<b>Information needed to complete task</b>	<b>Reference</b>
Nursing students	Mock service presentation	<ul style="list-style-type: none"> <li>• Anatomical images</li> <li>• Audio resources for drug pronunciation</li> </ul>	(Saimbert, 2005, pp. 42-51)
OT students	Patient communication assignment	<ul style="list-style-type: none"> <li>• Resources on health literacy, client-centred communication and patient education</li> <li>• Intervention evidence (research and anecdotal evidence from patients)</li> <li>• Intervention outcomes data</li> </ul>	(Cohn, Coster, & Kramer, 2014, pp. S77-S79)

## **Evidence-based practice on clinical placement**

The surveyed literature inferred that EBP motivators for information-seeking were related to occupational role requirements. The core components of EBP are summarised by Lin et al. (2010, p. 165); the first three components were identified most frequently within the studies discussed below:

*“(1) formulating the clinical question, (2) searching efficiently for the best available evidence, (3) critically analyzing evidence for its validity and usefulness, (4) integrating the appraisal with personal clinical expertise and clients’ preferences, and (5) evaluating one’s performance or outcomes of actions”*

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Students’ role requirements on clinical placements differ by user group according to professional standards and university learning objectives, however it was possible to discern some similarities within the information needs literature (College of Occupational Therapists, 2014, pp. 18-19; General Medical Council, 2011, pp. 2-21; Royal College of Nursing, 2006, pp. 2-16). For medical students, the most common EBP-related motivators were locating and critically appraising evidence for patient assessment (history-taking, physical and cognitive examinations) and patient care (consultations, consent processes, diagnoses, intervention planning, outcomes assessment). OTs and OT students were similar in terms of the utilisation of IL skills for finding and synthesising evidence to support patient assessment and care decisions. All three user groups also searched for clinical evidence to enhance understanding of disease causation, clinical presentation and intervention options. One notable difference was the emphasis placed on qualitative evidence (encompassing client perceptions) by OTs and OT students, in order to facilitate patient-led care and patient education.

There were no relevant studies on nursing students and other healthcare students, although methods of facilitating student engagement with EBP through IL teaching sessions were discussed (Kahouei, Ahmadi, & Kazemzadeh, 2014; McMillan & Raines, 2011; Roberts & Ousey, 2011; Silfen & Zgoda, 2008). Within the context of this dissertation, IL is defined as “having the skills to find and use relevant, high quality information” (Hamilton, Coldwell-Neilson, & Craig, 2014, p. 64).



**Table 4: Formulating a clinical question**

<b>Formulating a clinical question</b>		
<b>User group</b>	<b>IL skills and information needed for role requirements</b>	<b>Reference</b>
Qualified OTs	<ul style="list-style-type: none"> <li>Background questions (“who, what, where, when, how, and why”) were asked by newly qualified OTs and by those changing specialties to understand the role of OT interventions in relation to particular disorders</li> <li>Experienced OTs asked foreground questions formulated using PICO (“patient or problem, intervention, comparison intervention (if relevant) and outcome”)</li> </ul>	(Lin et al., 2010, p. 165)
OT students	<ul style="list-style-type: none"> <li>Formulating researchable questions from clinical questions for a patient evaluation plan</li> </ul>	(Villeneuve & Maranda, 2005, p. 13)

**Table 5: Searching efficiently for the best available evidence**

<b>Searching efficiently for the best available evidence</b>		
<b>User group</b>	<b>IL skills and information needed for role requirements</b>	<b>Reference</b>
Medical students	<ul style="list-style-type: none"> <li>Information needed for clinical assessment and patient care included; equipment use procedures, clinical presentation within specialties, disease aetiology, diagnostic tests, therapy rationales and drug dosages</li> </ul>	(Brennan et al., 2014, pp. 204-212)
	<ul style="list-style-type: none"> <li>Information needed for clinical practice included; drug dosages, local guidelines, point-of-care strategies, medical calculators and differential diagnosis supports</li> </ul>	(Boruff & Storie, 2014, p. 24)
	<ul style="list-style-type: none"> <li>Information needed for patient care planning included; clinical guidelines and peer-reviewed journal articles</li> </ul>	(Sastre, Denny, McCoy, & Spickard, 2011, pp. e306 & pp. e310-e311)
Qualified OTs	<ul style="list-style-type: none"> <li>Research evidence was needed to support clinical audits and research projects</li> </ul>	(Humphris et al., 2000, p. 518)
	<ul style="list-style-type: none"> <li>Research evidence was needed to support the clinical reasoning process and answer clinical questions</li> </ul>	(Salls, Dolhi, Silverman, & Hansen, 2009, pp. 138-139)
OT students	<ul style="list-style-type: none"> <li>Developing search strategies for clinical questions</li> <li>Information needed for assessment planning included; symptoms, assessment methods, client perceptions of the condition, the impact of the condition on occupational functioning and intervention outcomes evidence</li> </ul>	(Villeneuve & Maranda, 2005, pp. 13-19)

**Table 6: Critically analysing evidence**

<b>Critically analysing evidence</b>		
<b>User group</b>	<b>IL skills and information needed for role requirements</b>	<b>Reference</b>
Medical students	<ul style="list-style-type: none"> <li>Critically appraising and synthesising diagnostic and intervention evidence</li> </ul>	(Brennan et al., 2014, pp. 204-212)
	<ul style="list-style-type: none"> <li>Synthesising diagnostic and treatment evidence for patient care</li> </ul>	(Boruff & Storie, 2014, p. 24)
	<ul style="list-style-type: none"> <li>Critically appraising and synthesising research evidence to justify diagnostic and treatment decisions to patients during ward rounds</li> </ul>	(Morley & Hendrix, 2012, p. 299)
	<ul style="list-style-type: none"> <li>Integrating research evidence within the patient care decision-making process</li> </ul>	(Sastre et al., 2011, pp. e306 & pp. e310-e311)
OT students	<ul style="list-style-type: none"> <li>Appraising evidence for client assessments, intervention planning and outcomes prediction (EBP competence was graded during fieldwork)</li> </ul>	(Evenson, 2013, p. 299)
	<ul style="list-style-type: none"> <li>Facilitating client-centred practice through patient education and patient-led care by using evidence to provide a basis and rationale for treatment</li> </ul>	(Stube & Jedlicka, 2007, pp. 56-58)
	<ul style="list-style-type: none"> <li>Applying research evidence in practice to support patient care standards</li> </ul>	(Stronge & Cahill, 2012, pp. 9-12)

**Workplace skills**

The acquisition of soft and hard workplace skills was identified as the third occupation-related motivator for information-seeking, in terms of student preparedness for the clinical environment. Within the surveyed literature, there was no examination of the core workplace competencies required by nursing, medical or other healthcare students during clinical placements. However, a number of fundamental skills were identified by qualified OTs and OT students. These included soft skills (verbal communication, time management, workload prioritisation, reflective practice) and hard skills (financial resources management, undertaking research projects, use of equipment for assessments and therapies).

**Table 7: Soft workplace skills**

<b>Soft workplace skills</b>		
<b>User group</b>	<b>Soft skills and related information needed for role requirements and job tasks</b>	<b>Reference</b>
Qualified OTs	<ul style="list-style-type: none"> <li>• Case load management and prioritisation</li> <li>• Time management</li> <li>• Reflective practice</li> <li>• Current awareness</li> </ul>	(Nayar, Gray, & Blijlevens, 2013, pp. 193-195)
	<ul style="list-style-type: none"> <li>• Verbal communication (in-service presentations, meetings)</li> </ul>	(Powell & Case-Smith, 2010, pp. 368-369)
OT students	<ul style="list-style-type: none"> <li>• Verbal communication</li> <li>• Time management</li> <li>• Workload organisation and prioritisation</li> <li>• Problem-solving</li> <li>• Taking the initiative through creative thinking</li> <li>• Reflective practice</li> </ul>	(Dancza et al., 2013, pp. 427-433)

**Table 8: Hard workplace skills**

<b>Hard workplace skills</b>		
<b>User group</b>	<b>Hard skills and related information needed for role requirements and job tasks</b>	<b>Reference</b>
Qualified OTs	<ul style="list-style-type: none"> <li>• Knowledge of local financial procedures</li> <li>• Discharge planning</li> <li>• Use of equipment for assessments and therapies</li> </ul>	(Nayar et al., 2013, pp. 193-195)
	<ul style="list-style-type: none"> <li>• Grant applications</li> <li>• Undertaking research projects</li> <li>• Teaching preparation</li> </ul>	(Powell & Case-Smith, 2010, pp. 368-369) and (Powell & Case-Smith, 2003, p. 471)
	<ul style="list-style-type: none"> <li>• Use of assistive equipment and technologies</li> </ul>	(Gilman, 2011, p. 308)
	<ul style="list-style-type: none"> <li>• Research projects and publishing</li> </ul>	(Pighills, Plummer, Harvey, & Pain, 2013, p. 241)
OT students	<ul style="list-style-type: none"> <li>• Resources management</li> </ul>	(Dancza et al., 2013, pp. 427-433)

### **2.4.3 Preferred information resources and barriers inhibiting the satisfaction of needs (overarching themes 2 and 3)**

In accordance with Nicholas and Herman (2009, pp. 112-134), Case (2007, pp. 22-136) and Dorner et al. (2015, pp. 25-37), the surveyed literature illustrated that preferences for particular information resources are influenced by the occupational environment (tasks, role requirements, goals). As noted in 2.4.2, clinical tasks and role requirements typically included EBP, patient assessment and patient care. For students, academic assignments and the acquisition of workplace skills were additional requirements. These occupational variables reportedly impacted the perceived usefulness and applicability of specific types of information resources. For the purpose of this study information resources have been categorised as; human (colleagues, peers, patients, librarians), printed (textbooks, journals, lecture slides and handouts) and electronic (subscription and non-subscription electronic resources (e-resources), bibliographic databases, electronic books (e-books), electronic journals (e-journals) and point-of-care tools).

The user groups' resources preferences were not only related to job tasks, role requirements and goals. They were also impacted by the following contextual factors which had the potential to facilitate or impede the resolution of information needs; organisational culture (attitudes towards EBP and research utilisation), IL skills (training, information-seeking confidence), user awareness, and the accessibility and availability of information resources and services.

#### **Human information resources**

##### **Colleagues**

When information-seeking in the clinical environment, the first point of contact for most nursing and medical students was a colleague in a position of authority. Senior colleagues' advice was perceived to be instantly accessible, reputable, concise and immediately applicable to the local environment. As such, it was considered especially useful for patient assessment and care tasks. The preference for senior colleagues as an information resource was also linked to organisational culture; placement students were expected to adhere to the clinical decision-making hierarchy, so did not have the authority to challenge established protocols with research evidence.

There were no studies relating to OT students' perceptions of senior staff as an evidence source. However, qualified OTs regularly approached colleagues for anecdotal evidence due to their accessibility within the patient care setting, the contextual nature of Occupational Therapy interventions (knowledge of local norms and culture was valued), and a general lack of relevant research literature (many Occupational Therapy specialties are under researched) (Glegg & Holsti, 2010, p. 220; Law & Thomas, 2014, p. 88; Lin et al., 2010, p. 167).

**Table 9: Colleagues as an information resource**

<b>Colleagues as an information resource</b>			
<b>User group</b>	<b>Who approached and associated task(s)</b>	<b>Related barriers inhibiting the satisfaction of information needs (overarching theme)</b>	<b>Reference</b>
Nursing students	Practice mentors, task unspecified	<b>Accessibility - services:</b> <ul style="list-style-type: none"> <li>No time to use information resources</li> <li>Time constraint barrier exacerbated by poor access to computers and the inconvenient location and opening hours of libraries</li> </ul> <b>Lack of awareness - resources:</b> <ul style="list-style-type: none"> <li>Students were unaware of NHS e-resources</li> </ul>	(Baird, Peacock, Dobbins, & Walton, 2006, p. 288)
	Lecturers, nurses and doctors, task unspecified	<b>IL skills - training needs:</b> <ul style="list-style-type: none"> <li>Developing search strategies, filtering evidence and critical appraisal</li> </ul> <b>IL skills - information-seeking confidence:</b> <ul style="list-style-type: none"> <li>Students with confidence were more likely to engage in EBP</li> </ul>	(Brown, Kim, Stichler, & Fields, 2010, pp. 523-526)
	Clinical tutors, for patient care	<b>Organisational culture - research utilisation:</b> <ul style="list-style-type: none"> <li>Support for EBP was greater during campus education than during placements</li> <li>Clinical tutors focussed on practical skills without explaining the theoretical basis</li> </ul>	(Florin, Ehrenberg, Wallin, & Gustavsson, 2012, p. 894)
	Nurses, for implementing local patient care guidelines	<b>IL skills - information-seeking confidence:</b> <ul style="list-style-type: none"> <li>Navigating library resources</li> </ul> <b>Organisational culture - research utilisation:</b> <ul style="list-style-type: none"> <li>Supervisors did not use research evidence due to lack of time. Colleagues were the fastest way to obtain concise information</li> </ul>	(Dee & Stanley, 2005, p. 217 & p. 219)
Medical students	Nurses and doctors, for clinical decision-making regarding patient care	<b>Organisational culture - values, practices</b> <ul style="list-style-type: none"> <li>This preference was attributed to the students' typical learning styles; trainees focussed on acquiring core clinical facts instead of up-to-date medical research</li> <li>Lack of confidence and authority to make decisions within the clinical hierarchy</li> </ul>	(Lai & Nalliah, 2010, pp. 7-8)
Qualified OTs	OT colleagues, for patient care	<b>Barriers unspecified</b>	(Powell & Case-Smith, 2003, p. 371)
	OT colleagues, for patient care	<b>Organisational culture - research utilisation</b> <ul style="list-style-type: none"> <li>Anecdotal evidence was highly valued</li> </ul>	(Gilman, 2011, p. 308)

## Peers

Peer discussion was viewed as helpful and informative by medical and OT students on clinical placements. This was attributed to ease of access, time limitations (heavy workloads), typical learning styles (value was placed on instantaneous core clinical facts), communication preferences (face-to-face or social networking), and that other students' resources recommendations and evidence summaries were directly relevant to the task at hand.

**Table 10: Peers as an information resource for students**

<b>Peers as an information resource for students</b>			
<b>User group</b>	<b>Who approached and associated task(s)</b>	<b>Related barriers inhibiting the satisfaction of information needs (overarching theme)</b>	<b>Reference</b>
Medical students	Peers, task unspecified	<b>Barriers unspecified:</b> <ul style="list-style-type: none"> <li>• “Ask a classmate” was ranked third in terms of importance after textbooks/handouts and databases</li> </ul>	(Boumarafi, 2010, p. 355)
	Peers, task unspecified	<b>Accessibility and availability - resources:</b> <ul style="list-style-type: none"> <li>• Limited remote access</li> <li>• Due to time constraints students typically conducted short searches of five minutes or less</li> <li>• Print collections were considered inaccessible</li> <li>• Evidence from peers was valued due to ease of access and the perceived quality of other students' resources recommendations</li> </ul>	(Brennan et al., 2014, p. 208)
	Peers, task unspecified	<b>Accessibility and availability - resources:</b> <ul style="list-style-type: none"> <li>• Peers were considered easily accessible, especially due to social networking</li> </ul>	(Kuhn & Edwards-Waller, 2009, pp. 257-258)
	Peers, task unspecified	<b>Accessibility and availability - resources:</b> <ul style="list-style-type: none"> <li>• Peers' advice was valued because of its accessibility</li> </ul>	(Lai & Nalliah, 2010, pp. 7-8)
OT students	Peers, task unspecified	<b>Barriers unspecified:</b> <ul style="list-style-type: none"> <li>• Over one-third felt most comfortable asking a classmate for help</li> </ul>	(Kipnis & Frisby, 2006, p. 14)

## Patients

Patients as an evidence source were only mentioned in studies on qualified OTs, in which research literature was reportedly interpreted with reference to clients' personal preferences, task priorities and sociocultural environments. This was due to the holistic and client-centred nature of Occupational Therapy practice.

**Table 11: Patients as an information resource**

<b>Patients as an information resource</b>			
<b>User group</b>	<b>Who approached and associated task(s)</b>	<b>Related barriers inhibiting the satisfaction of information needs (overarching theme)</b>	<b>Reference</b>
Qualified OTs	Patients, to support clinical decision-making	<p><b>Organisational culture - research utilisation:</b></p> <ul style="list-style-type: none"> <li>• Clients' wishes were considered as important as research evidence</li> <li>• Most OTs felt that "clinical decisions should be based on a combination of best available evidence, client wishes, and professional experience"</li> <li>• No protected time to locate or read research literature</li> <li>• Research related work responsibilities were rare, contributing to a general lack of Occupational Therapy research evidence</li> <li>• Negative attitudes towards EBP</li> </ul> <p><b>Accessibility and availability - resources:</b></p> <ul style="list-style-type: none"> <li>• Limited access to resources</li> <li>• Lack of Occupational Therapy specific evidence</li> </ul> <p><b>Availability - services:</b></p> <ul style="list-style-type: none"> <li>• No on-site librarian</li> </ul>	(Law & Thomas, 2014, pp. 84-89)
	Paediatric patient and patient's family, to support assessment and care	<p><b>Barriers unspecified:</b></p> <ul style="list-style-type: none"> <li>• Research evidence was interpreted with reference to the patient's values and experiences</li> </ul>	(Copley, Turpin, & King, 2010, p. 250 & p. 252)

## Librarians

Only Kipnis and Frisby's (2006, pp. 14-16) study on OT students referred to librarians as an evidence source. As inferred by Callaghan et al.'s (2008, p. 258) research on social care students in which librarians were considered unapproachable, one possible reason is that healthcare students and qualified OTs hold negative opinions of library staff. This subtheme merits further investigation.

**Table 12: Librarians as an information resource**

Librarians as an information resource			
User group	Who approached and associated task(s)	Related barriers inhibiting the satisfaction of information needs (overarching theme)	Reference
OT students	One-fifth said that they would approach the library for help, task unspecified	<p><b>Lack of awareness - resources and services:</b></p> <ul style="list-style-type: none"> <li>The following was recommended to improve awareness; face-to-face introductions between new students and librarians, establishing a liaison programme so that students had personal contacts within the library, closer collaboration with faculty members, and scheduling formal library induction and information literacy sessions within the students' timetables</li> </ul>	(Kipnis & Frisby, 2006, pp. 14-16)

## Printed information resources

Printed books were a valued source of information for nursing, medical and OT students. Nursing students preferred textbooks over e-resources when writing academic assignments because the information was perceived to be high quality, reliable, convenient, concise and easy to navigate. Accordingly, textbooks were used to generate assignment ideas, bridge general knowledge gaps, consolidate theory, and as a vocabulary prompt for bibliographic databases. Medical students reportedly found textbooks useful for examination preparation, providing an overview of medical conditions and answering clinical questions within specialties. OT students used textbooks to enhance their understanding of specific conditions for academic assignments, as well as to support client consultations during placements. Relevant information on qualified OTs is limited; only two studies referred to the utilisation of books during clinical practice.



The literature suggested that the perceived usefulness of printed books was dependent upon ease of access and availability. Similar barriers were identified by nursing, medical and social care students; the poor location of physical library services in relation to placements, unsuitable opening hours, short loan periods, the inadequate quality and size of book collections, and inequitable service provision between placement libraries. These barriers were exacerbated by time constraints, as the students were often unable to visit placement libraries due to heavy workloads, staff shortages and shift times. OTs and OT students' perceptions of barriers to printed information resources are not well documented.

**Table 13: Printed resources**

Printed resources			
User group	Type of printed resources used and associated task(s)	Related barriers inhibiting the satisfaction of information needs (overarching theme)	Reference
Nursing students	Textbooks, for written assignments. Considered useful for generating ideas, consolidating theory, confirming key principles, and as a vocabulary prompt for search terms	<b>Barriers unspecified</b>	(Duncan & Holtlander, 2012, p. 23)
	Textbooks, for clinical decision-making. Considered useful for succinct, quality information and ease of navigation	<b>Barriers unspecified</b>	(Brown et al., 2010, p. 523)
	Textbooks, task unspecified. Considered useful for concise and reliable information, and convenience of access compared to e-resources	<b>Accessibility - services:</b> <ul style="list-style-type: none"> <li>Poor location of computers on wards in relation to patients</li> <li>No library-mediated search and retrieval service</li> </ul>	(Dee & Stanley, 2005, pp. 216-219)
	Textbooks, for patient care	<b>Organisational culture - research utilisation:</b> <ul style="list-style-type: none"> <li>Hospital environment did not encourage e-resources usage</li> <li>Clinical educators did not emphasise using e-resources</li> </ul>	(Kahouei et al., 2014, pp. 252-256)
Health and social care students	Textbooks, task unspecified	<b>Accessibility - resources and services:</b> <ul style="list-style-type: none"> <li>Heavy workloads meant limited time to visit placement libraries, so students purchased textbooks instead</li> <li>Related books were located in different placement libraries</li> <li>Size and quality of book collections varied between placement libraries</li> <li>Limited local resources compared to university library</li> <li>Unpredictable opening times</li> <li>Unfriendly library staff</li> <li>Short loan periods</li> </ul>	(Callaghan et al., 2008, p. 258)
Medical students	Textbooks and lecture handouts, task unspecified	<b>IL skills - training needs:</b> <ul style="list-style-type: none"> <li>Lack of search skills was a major barrier to e-resources access and use</li> </ul>	(Boumarafi, 2010, pp. 354-359)
	Textbooks, for answering clinical questions	<b>Barriers unspecified</b>	(Lai & Nalliah, 2010, p. 5)
	Pocketbooks, for clinical placements. Considered useful for portable background information for specialties	<b>Barriers unspecified</b>	(Brennan et al., 2014, pp. 207-210)
Qualified OTs	Textbooks, for clinical practice	<b>Barriers unspecified</b>	(Gilman, 2011, p. 308)
	Textbooks, for clinical practice	<b>Barriers unspecified</b>	(Powell & Case-Smith, 2010, p. 369)
OT students	Textbooks, for written assignments. Considered useful for bridging general knowledge gaps	<b>Barriers unspecified</b>	(Villeneuve & Maranda, 2005, p. 14)
	Textbooks, for engaging in EBP during clinical placements	<b>Barriers unspecified</b>	(Stronge & Cahill, 2012, p. 13)

### **Electronic information resources**

Subscription e-books, e-journals and bibliographic databases were frequently mentioned by nursing, social work and medical students within the context of researching and writing academic assignments. They were especially valued for their convenience and 24-hour accessibility from any location. When referring to particular bibliographic databases, nursing students indicated preferences for CINAHL, MEDLINE and PsycINFO, whereas medical students selected the Cochrane Library, EMBASE and Scopus. No specific e-books or e-journal titles were cited. Both nursing and medical students utilised point-of-care tools during clinical practice. The following titles were highly regarded because they offered evidence syntheses to support diagnosis, assessment and treatment; UpToDate, SkolarMD, PEPID Drug Database, MedCalc, DynaMed, Epocrates, First Consult and MD Consult (now known as ClinicalKey). As such, they were felt to provide concise answers to clinical questions, guidance for practical procedures, and recommendations for clinical practice (reducing the need for time intensive critical appraisal). OTs and OT students tended to use an interdisciplinary mix of e-journals and bibliographic databases for academic assignments, patient assessment, client care and clinical decision-making. Those specified included; the Cochrane Library, MEDLINE, CINAHL, PsycINFO, ERIC and Health and Psychosocial Instruments.

All of the user groups identified similar barriers to subscription e-resources; unreliable hospital Wi-Fi (downloadable content was therefore preferred), inaccessibility (slow loading speeds, inefficient search functionality, mobile incompatibility, app unavailability, time-consuming software installation processes, complicated log-in procedures), little knowledge of the resources available, uncondusive organisational culture (low levels of research utilisation by clinical educators, little protected time to visit the library, low strategic prioritisation of EBP) and insufficient IL training. For OTs and OT students the absence of specialist research was another significant issue. This was attributed to a lack of funding and organisational support for investigative projects within Occupational Therapy specialties, coupled with the fact that Occupational Therapy is a relatively new discipline (Bennett, McKenna, McCluskey, et al., 2007, p. 429; Law & Thomas, 2014, p. 84 & p. 88; Pighills et al., 2013, p. 241).

These barriers reportedly impacted the perceived usefulness of subscription e-resources. Accordingly, online non-subscription resources were popular amongst nursing and medical

students writing academic assignments and on clinical placements. Named sites included; Google Scholar, Wikipedia and PubMed. OTSeeker (a freely available bibliographic database) was valued highly by OTs and OT students, for its provision of abstracts relating to systematic reviews and randomised controlled trials on the effectiveness of Occupational Therapy interventions (Bennett, McKenna, Hoffmann, et al., 2007, p. 508; McCluskey, Bennett, Hoffmann, & Tooth, 2010, p. 107).

**Table 14: Electronic resources**

Electronic resources			
User group	Type of electronic resources used and associated task(s)	Related barriers inhibiting the satisfaction of information needs (overarching theme)	Reference
Nursing students	Non-subscription e-resources (Google Scholar, Wikipedia), for writing assignments. Considered useful for reducing uncertainty, building a knowledge base and acquiring a topic overview before testing search terms in CINAHL	<b>Barriers unspecified</b>	(Duncan & Holtslander, 2012, pp. 20-27)
	Bibliographic databases (CINAHL, MEDLINE, MedlinePlus, PsycINFO), e-books and point-of-care tools (First Consult, SkolarMD, PEPID, Epocrates), for writing a patient care plan	<b>Barriers unspecified</b>	(Saimbert, 2005, pp. 49-51)
	Bibliographic databases (CINAHL, MEDLINE, MedlinePlus) and non-subscription e-resources (PubMed), task unspecified	<b>Accessibility - services:</b> <ul style="list-style-type: none"> <li>Unsuitable location of library in relation to car parks and wards meant that e-resources were preferred</li> </ul> <b>IL skills - training needs:</b> <ul style="list-style-type: none"> <li>Developing search strategies, using limits and subheadings</li> </ul>	(Dee & Stanley, 2005, pp. 214-218)
Social work students	E-books, for clinical questions on placement. Considered useful for their convenience and 24-hour accessibility from any location	<b>Barriers unspecified</b>	(Shepherd & Arteaga, 2014, p. 22)
	E-books, e-journals and bibliographic databases, for independent research	<b>Barriers unspecified</b>	(Bausman & Ward, 2015, pp. 27-32)
Medical students	Non-subscription e-resources (Medscape, PubMed) and point-of-care tools (UpToDate, Epocrates, MedCalc, DynaMed, PEPID), for patient consultations and care	<b>Accessibility - resources:</b> <ul style="list-style-type: none"> <li>Complicated software installation</li> <li>Mobile incompatible</li> <li>Inconsistent Wi-Fi coverage</li> <li>Non-downloadable content</li> <li>Slow loading times</li> </ul> <b>Lack of awareness - resources</b>	(Boruff & Storie, 2014, pp. 24-28)
	Non-subscription e-resources (PubMed) and point-of-care tools (First Consult, MDConsult), for unspecified tasks on clinical placement	<b>IL skills - training needs:</b> <ul style="list-style-type: none"> <li>Reference management software</li> </ul> <b>Lack of awareness - resources</b>	(Lasserre, Foxlee, Kruesi, & Walters, 2011, pp. 148-149)
	Non-subscription e-resources (Wikipedia), for unspecified tasks on clinical placement	<b>Accessibility - resources:</b> <ul style="list-style-type: none"> <li>Password frustrations meant e-subscriptions were often ignored</li> </ul>	(Brennan et al., 2014, p. 207)
	E-journals, bibliographic databases (the Cochrane Library, EMBASE, Scopus) and non-subscription e-resources (Google Scholar, Medscape, PubMed, Wikipedia), task unspecified	<b>Lack of awareness - resources and services:</b> <ul style="list-style-type: none"> <li>High number of information gateways meant students often purchased articles even though there were institutional subscriptions</li> </ul>	(Kuhn & Edwards-Waller, 2009, pp. 258-260)
	E-journals, bibliographic databases (the Cochrane Library), task unspecified	<b>Accessibility - resources:</b> <ul style="list-style-type: none"> <li>Single journal titles favoured over bibliographic databases due to speed of access</li> </ul>	(Lai & Nalliah, 2010, p. 5 & p. 9)
	Non-subscription e-resources (National Guidelines Clearinghouse) and bibliographic databases (the Cochrane Library), task unspecified	<b>Barriers unspecified</b>	(Sastre et al., 2011, p. e307)

	Point-of-care tools (Clin-eguide Mobile), for patient care decision-making. Considered useful for synthesised bullet point answers to common clinical questions	<b>Accessibility - resources:</b> <ul style="list-style-type: none"> <li>Unreliable hospital Wi-Fi meant students wanted mobile compatible apps with downloadable content</li> </ul>	(Graham, Maher, Moore, & Morton-Owens, 2012, pp. 329-330)
	Point-of-care tools (UpToDate), for academic assignments and patient care decision-making on placement	<b>Availability - resources:</b> <ul style="list-style-type: none"> <li>No University subscription to UpToDate meant that students purchased individual subscriptions</li> </ul> <b>Lack of awareness - resources</b> <ul style="list-style-type: none"> <li>Led to reliance on serendipitous discovery</li> </ul>	(Storie & Campbell, 2012, pp. 51-53)
Qualified OTs	Bibliographic databases (CINAHL, the Cochrane Library, ERIC, MEDLINE, OTSeeker, PsycINFO), task unspecified	<b>Availability - lack of evidence:</b> <ul style="list-style-type: none"> <li>Lack of specialised research evidence for Occupational Therapy</li> <li>Other healthcare literature was not easily applicable to clinical practice due to the immediacy of OTs' information needs and the difficulties associated with discerning the "best evidence" for specific clients</li> </ul>	(Powell & Case-Smith, 2010, pp. 366-370) and (Powell & Case-Smith, 2003, pp. 472-475)
	E-journals, bibliographic databases (CINAHL, MEDLINE) and non-subscription e-resources (PubMed), task unspecified	<b>Availability - lack of evidence:</b> <ul style="list-style-type: none"> <li>Limited quantity of research on Occupational Therapy interventions</li> </ul>	(Gilman, 2011, pp. 308-309)
	Non-subscription e-resources (practice guidelines incorporated with patient preferences), for clinical decision-making	<b>IL skills - training needs:</b> <ul style="list-style-type: none"> <li>Understanding research terminology and statistics, applying evidence to patient populations, critical appraisal</li> </ul>	(Heiwe et al., 2011, pp. 202-204)
	E-resources (unspecified), for patient care	<b>Organisational culture - research utilisation:</b> <ul style="list-style-type: none"> <li>Local policies uncondusive to EBP, as service contribution was measured by patient contact time</li> <li>No dedicated time for research</li> </ul>	(Humphris, Littlejohns, Victor, O'Halloran, & Peacock, 2000, p. 520)
	E-resources (unspecified), for clinical decision-making	<b>Organisational culture - research utilisation:</b> <ul style="list-style-type: none"> <li>Low strategic prioritisation of EBP</li> <li>No support for critical appraisal sessions (journal clubs, IL training)</li> <li>A hierarchical approach to clinical decision-making (no encouragement to challenge established clinical protocols with new evidence)</li> </ul>	(Welch & Dawson, 2006, p. 235)
OT students	E-journals and bibliographic databases (CINAHL, the Cochrane Library, Health and Psychosocial Instruments, MEDLINE), for an academic assignment involving evaluation planning	<b>Barriers unspecified</b>	(Villeneuve & Maranda, 2005, p. 17)
	E-journals, for an academic assignment involving evidence-based decision-making and client-practitioner communication	<b>IL skills - training needs:</b> <ul style="list-style-type: none"> <li>Enhancing efficiency when literature searching</li> <li>Appraisal of intervention evidence</li> </ul>	(Cohn et al., 2014, pp. S73-S78)
	E-journals, for applying evidence to patient cases	<b>Organisational culture - research utilisation:</b> <ul style="list-style-type: none"> <li>Clinical supervisors asked students to find articles to identify and apply evidence to patient cases</li> </ul>	(Stube & Jedlicka, 2007, p. 58)
	Unspecified	<b>Organisational culture - research utilisation:</b> <ul style="list-style-type: none"> <li>Clinical educators did not visibly engage in EBP</li> </ul>	(Stronge & Cahill, 2012, pp. 11-13)

## **2.5 Literature review summary and research recommendations**

This study is located within the user-centred research tradition, alongside theorists who regard information needs as dynamic, subjective and contextual (2.3.3). The contextual variability of information needs within different occupational environments is the primary focus of this dissertation. The term occupation refers to profession (student), specialisation (Occupational Therapy), career stage (Masters level), pattern of learning (full-time and distance learning due to clinical placements), organisational culture (shared assumptions, values and beliefs), and tasks (the specific demands placed on students during their course of study).

This review demonstrated that a substantial literature gap exists regarding the information needs of OT students (2.4). Although a critical evaluation of related studies on healthcare students (nursing, medical, social work, allied health) was undertaken (2.4), the distinctive nature of Occupational Therapy theory and practice (as established in 1.5) highlights the need for an investigation that focuses specifically on OT students.

The aim of this study is to explore the information needs of OT students and to identify the factors contributing to library use and non-use (1.3.2). The following contextual variables were discerned from the thematic analysis of information needs literature (2.4) and the delineation of information needs models (2.3). These factors relate directly to the objectives (1.3.3) and will closely inform the methodology (Chapter Three).

### **Motivators for information-seeking (overarching theme 1)**

- Academic assignments (written and verbal)
- Evidence-based practice on clinical placement (formulating a clinical question, searching efficiently for the best available evidence, critically analysing evidence)
- Workplace skills (soft, hard)

### **Preferred information resources (overarching theme 2)**

- Human information resources (colleagues, peers, patients, librarians)
- Printed information resources
- Electronic information resources

### **Barriers inhibiting the satisfaction of information needs (overarching theme 3)**

- Organisational culture (attitudes to research utilisation, local values and practices)
- IL skills (training needs, information-seeking confidence)
- Accessibility (resources, services)
- Availability (resources, services, lack of evidence)
- Lack of awareness (resources, services)



## **3. Methodology**

### **3.1 Introduction**

As seen through the literature review (2.3.3) user-oriented information needs theorists typically adhered to interpretivist, constructionist and inductive methodologies with qualitative or mixed methods research designs. This study is located within the user-oriented research tradition and adopts the same methodological approach. As such, the development of the methodology was closely informed by the work of Dervin and Nilan (1986), Kuhlthau (1991), Nicholas and Herman (2009), Case (2007) and Dorner et al. (2015). The methodology was also guided by the thematic analysis of information needs literature (2.4).

One institutional case (Institution A) was selected through non-probability purposive snowball sampling. The unit of analysis was individual OT students (Masters level, both library users and non-users). The research instrument was a mixed methods self-completion questionnaire administered online by email attachment. Patterns within the total data set were identified through inductive thematic analysis and non-parametric descriptive statistical analysis.

### **3.2 Research philosophy**

This investigation is located within the user-oriented research tradition. Like the majority of user-oriented research, its methodology is interpretivist, constructionist and inductive. The interpretivist and constructionist philosophical stance asserts that meaning is created through individuals' social interactions with the world and that perceptions are influenced by each person's environment, experiences and values (Bryman, 2008, p. 19; Gray, 2009, pp. 14-18). The role of the researcher is to foster understanding of participants' perceptions of reality in specific settings while also recognising the impact of their own preconceptions (Bryman, 2008, p. 19; Gray, 2009, pp. 14-18).

Within this study information needs are accordingly conceptualised as subjective and contextual products of an individual's personality (cognitive processes and emotions), demographic background (age, cultural heritage, socioeconomic group and educational level) and occupation (profession, specialisation, career stage, organisational culture and tasks) (Case, 2007, p. 246; Dorner et al., 2015, pp. 24-45; Nicholas & Herman, 2009, pp. 112-116). The principal focus is the contextual variability of information needs in relation to occupation. Occupation is defined as profession (student), specialisation (Occupational Therapy), career stage (Masters level), pattern of learning (full-time and

distance learning due to clinical placements), organisational culture (shared assumptions, values and beliefs) and tasks (the specific demands placed on students during their course of study).

Although the methodology draws upon conceptual models relating to information needs (2.3.3-2.4), the investigation is predominantly inductive due to the exploratory nature of the research question (Bryman, 2008, pp. 9-13; Gray, 2009, pp. 14-16). Three contextual variables were discerned from the literature review to guide the enquiry (2.5). These variables relate to the objectives (1.3.3) and closely informed the methodology, however they did not function as hypotheses.

### **3.3 Research design**

Although the chosen research philosophy is traditionally associated with qualitative studies, a mixed methods research design was selected because it had a number of advantages within the context of the research question.

The research question was qualitative in nature, requiring the exploration of students' perceived information needs through the identification of thematic consistencies and discrepancies. The use of open questions and inductive thematic analysis enabled in-depth examination of the students' perceptions, opinions and attitudes. It facilitated contextual understanding in relation to how and why occupational motivators and barriers arose and the situational reasons behind resource preferences. Additionally, unanticipated themes could arise inductively because the participants' comments were not constrained by the researcher's pre-determined responses (Gray, 2013, pp. 160-163).

Quantitative data collection and analysis methods were used concurrently to help offset the weaknesses of an exclusively qualitative research design (Gray, 2013, p. 196 & p. 202). These potential weaknesses included; low internal validity (improved through the corroboration of findings), poor reliability (replicability was enhanced through standardised quantitative procedures), limited contextual understanding (statistical analysis illuminated patterns within the qualitative data set), minimal explanation of findings (relationships between variables were easier to discern, enabling theory-building) and perceived lack of utility (negated through the provision of statistics for policy-makers) (Bryman, 2012, pp. 622-646; Gray, 2013, pp. 196-202).

Related mixed methods studies include; (Brennan et al., 2014, p. 205; Dorner et al., 2015, pp. 55-76; Gannon-Leary et al., 2006, p. 250; Graham, Robertson, & Anderson, 2013; Kuhlthau, 1991, pp. 364-

370; Lasserre et al., 2011, p. 145; Nicholas & Herman, 2009, pp. 10-145; Pighills et al., 2013, p. 243; Sastre et al., 2011, p. e307; Shepherd & Arteaga, 2014, p. 18).

### **3.4 Research strategy**

The research strategy was a single case study. One institutional case (Institution A) was selected; the case selection criteria are discussed in 3.5. In relation to the research question (1.3.1) and research philosophy (3.2), a case study was deemed most suitable because it facilitated the in-depth exploration of local perceptions and the detection of associative patterns (Bryman, 2008, pp. 56-57; Pickard, 2007, pp. 86-90). The narrow focus and localised scope enabled intensive examination of the contextual relationships between the occupational environment and the students' information needs (Gray, 2013, pp. 266-267; Pickard, 2007, p. 88). The research strategy was flexible enough for inductive theory building as it could be adjusted as unanticipated themes arose (Gray, 2013, p. 269). It was also anticipated that detailed understanding of a single case would lead to the generation of theories, which could be applied and tested through comparative case studies in the future.

The following are examples of user-oriented case studies; (Baird et al., 2006, p. 286; Copley et al., 2010, p. 250; Dorner et al., 2015, pp. 55-76; Heiwe et al., 2011, p. 199; Kuhlthau, 1991, pp. 364-370; McCluskey et al., 2010, p. 107; Morley & Hendrix, 2012, p. 297; Nicholas & Herman, 2009, pp. 10-145).

### **3.5 Sampling procedure**

The following inclusion criteria were established; location (England), profession (student), specialisation (Occupational Therapy), career stage (Masters level), pattern of learning (full-time, distance learning), institution (COT accredited), library users or non-users (both). The total population was full-time Masters students on COT accredited Occupational Therapy programmes in England.

Initial contact was made with the study's key informant (an OT graduate from Institution A), who recommended Institution A as an information-rich case. Institution A was therefore selected from the sample frame (appendix H) through non-probability sampling (purposive, snowball). The unit of analysis was individual OT students (Masters level, both library users and non-users). The key informant was asked to approach a senior faculty member from Institution A with an invitation to

assist with the research. After an expression of interest, an invitation email was sent to the faculty member explaining the purpose and requirements of the study (appendix I). Following verbal agreement, the final sample was determined (one cohort, 27 students in total) and data collection was scheduled for 16<sup>th</sup> June 2016.

The key informant was the researcher's family member, which meant the sample selection was significantly impacted by researcher bias. However, non-probability sampling was felt to be justified because; the key informant had a personal connection to the institution which increased the likelihood of faculty collaboration, the faculty member was known to the students and was willing to recruit them directly to maximise the response rate, it facilitated the identification and recruitment of participants who were guaranteed to match the inclusion criteria, and the establishment of a fixed sample (27 participants, barring instances of non-response) meant there was no risk of data saturation and no need to establish a data collection termination strategy (Bryman, 2008, p. 183 & p. 418; Gray, 2013, p. 213; Pickard, 2007, pp. 65-66).

Purposive sampling strategies were also employed by (Brown et al., 2010, p. 522; Copley et al., 2010, p. 250; Duncan & Holtslander, 2012, p. 20; Franks & McAlonan, 2007, p. 260; Gannon-Leary et al., 2006, p. 253; Kahouei et al., 2014, p. 253; Kloda & Bartlett, 2014, p. 70; Law & Thomas, 2014, p. 84; Roberts & Ousey, 2011, p. 335; Salls et al., 2009, p. 137; Storie & Campbell, 2012, p. 50).

### **3.6 Research instrument**

#### **3.6.1 Question formulation**

The research instrument was a mixed methods self-completion questionnaire (appendix J). Question formulation occurred thematically through the three contextual variables identified within the literature review (2.5) and the study's objectives (1.3.3). The research problem was user-oriented and explorative relating to students' perceptions and attitudes, so the questions were evaluative and not factual. Demographic questions were not included as the study's principal focus was the occupational variability of information needs.

### **Closed questions**

There were twelve closed questions with fixed alternatives. These were designed to produce nominal data relating to participants' knowledge, skills, awareness, preferences, utilisation of specific resources and the situational context (Bryman, 2012, pp. 335-336). The response categories were not mutually exclusive or exhaustive; an "other" option was provided for unanticipated answers. There was one matrix question (number 2.7) which prompted participants to evaluate the importance of three types of evidence (research, anecdotal and mixed) in relation to specific motivators for information-seeking. It was anticipated that the inclusion of closed questions would minimise respondent fatigue, reduce the intentional omission of questions, make the intended meaning of the questions clearer, and minimise the impact of researcher bias during data interpretation (Bryman, 2012, pp. 249-252).

### **Open questions**

There were five open questions which were designed to elicit more detailed evidence on the students' perceptions, opinions, attitudes and expectations (Bryman, 2012, pp. 246-254; Gray, 2013, pp. 358-360). Each question had a single text box for answers with no specified response length. The inclusion of open questions was expected to enhance reliability through data corroboration, while also facilitating the inductive exploration of unanticipated topics.

### **Wording**

Each question was unambiguously worded to enhance understanding, written in a conversational style to put respondents at ease, and purposely formulated to avoid stereotyping and normative assumptions (Pickard, 2007, p. 186). There were no leading questions. The only technical terminology related to Occupational Therapy; this was deemed appropriate for the scope of the study. Clear and succinct instructions were included next to each question to minimise confusion during completion of the survey and reduce the risk of missing data (Fanning, 2005, pp. 4-5).

## **3.6.2 Question presentation**

### **Ordering**

Thematic question grouping and logical question flow were used to minimise cognitive burden; this meant the participants were more likely to keep focus, interpret the questions correctly and provide fuller responses (Fanning, 2005, pp. 5-6). Closed questions were placed first within each thematic section to infer that the questionnaire would be quick and easy to complete (Fanning, 2005, pp. 5-6). It was anticipated that once participants had committed to answering the closed questions, the

response rates for the open questions would be higher (Pickard, 2007, p. 186). Where possible, the questions were also ordered by type of instruction to reduce the possibility of respondent error or missing data (Fanning, 2005, pp. 4-5).

## **Layout**

The following design decisions were made to optimise internal validity and reliability; large spaces between questions (to minimise inadvertent question omission), question numbering within each section (to provide a clear navigational path), a variety of font styles (to distinguish between instructions, questions and fixed answers), vertical arrangement of fixed answers (to lessen the risk of respondent error), different types of instructions (to reduce response set acquiescence) and a clear, large and dark typeface for readability and accessibility (Bryman, 2012, pp. 237-263; Fanning, 2005, pp. 6-8; Gray, 2013, pp. 361-367).

Self-completion questionnaires were also used as the sole research instrument in studies by (Boumarafi, 2010, p. 355; Brown et al., 2010, p. 522; Florin et al., 2012, p. 888; Graham et al., 2013, p. 122; Heiwe et al., 2011, p. 199; Kuhn & Edwards-Waller, 2009, p. 255; Law & Thomas, 2014, p. 81; Pighills et al., 2013, p. 243; Shepherd & Arteaga, 2014, p. 18).

## **3.7 Data collection**

### **3.7.1 Pilot**

The questionnaire was piloted by the key informant and two other recently qualified OTs. Comments were invited on the clarity of the instructions, question wording, navigational path, response options, and the overall length and general layout (Gray, 2013, p. 354). There were no suggested adjustments.

### **3.7.2 Anticipated data collection procedure**

Originally, the questionnaire was going to be administered by the key informant and the faculty member during a cohort lecture. A printed supervised self-completion format was chosen for the following reasons; to reach the maximum target audience, to limit discussion between respondents, to optimise response rates, to eliminate the risk of multiple responses from one participant, and to facilitate immediate data turnaround (Bryman, 2012, pp. 235-239; Case, 2012, pp. 238-239).

Additionally, there would have been no bias to the sample through requiring participant access to a computer.

### 3.7.3 Final data collection procedure

The faculty member was informed that the cohort's clinical placements had been extended in duration until the end of the summer term. Cohort lectures would not resume until autumn, so the faculty member offered to administer the survey via email. The questionnaire was sent as a Microsoft Word attachment with an introduction written by the faculty member. Respondents were asked to return the questionnaire as an attachment to the researcher or the faculty member.

### 3.7.4 Sampling and data collection protocols

**Table 15: Sampling and data collection protocols**

Date	Stage of research process
31/05/2016	Invitation email sent to the key informant to forward to the faculty member at Institution A
31/05/2016	Invitation email forwarded to the faculty member at Institution A (appendix I)
10/06/2016	Pilot
15/06/2016	Questionnaire sent as an email attachment to the key informant
15/06/2016	Questionnaire sent to the faculty member at Institution A by the key informant
16/06/2016	Questionnaire sent by email to 27 Masters students (one whole cohort) by the faculty member at Institution A (appendix J)
16/06/2016-05/07/2016	Completed questionnaires were returned by email attachment to the faculty member and to the researcher
16/06/2016-05/07/2016	The questionnaires received by the faculty member were forwarded to the researcher
16/06/2016-05/07/2016	The data was copied into a password protected Excel spreadsheet and anonymised. The original emails were deleted as soon as data entry was complete

## 3.8 Ethical considerations

### 3.8.1 Ethical guidelines

This investigation was subject to a procedural ethics check by the researcher's academic supervisor. It was low risk, so referral to Aberystwyth University's Ethics Committee was not necessary. Five sets of guidelines were followed throughout; the Department of Information Studies' (Aberystwyth University) Ethics Policy for Research (2016), the Data Protection Act (1998), Aberystwyth University Records Management/Information Governance Policy (Archer, 2016), the British Sociological Association's Statement of Ethical Practice (2002) and the Chartered Institute of Information Professionals' Code of Professional Practice (2012).

### **3.8.2 Informed consent**

The purpose of the research was clearly stated in the “invitation to complete a questionnaire” (appendix J) alongside the study’s potential benefits, the time commitment involved, and that responding to the questionnaire either in full or in part was voluntary (Gray, 2013, p. 75). Additional information included; confidentiality and privacy assurances, data security provision and that informed consent would be assumed on receipt of the completed questionnaire. The invitation was succinctly worded (to ensure comprehension), the researcher’s contact details were prominent (in case of questions or concerns), and the participants’ right to withdraw from the study up until the point of submission was plainly stated. One potential concern was that students may feel inadvertently pressured to take part due to their tutor’s involvement in survey administration. Instances of non-response were therefore not followed up.

### **3.8.3 Confidentiality and privacy**

The participants were informed that individual anonymity was not possible until the data analysis stage of the research project, due to the nature of the research instrument. The data from each questionnaire was copied into a password protected Excel spreadsheet and anonymised to ensure confidentiality and privacy. An identification number was used to refer to individual participants from this point onwards. The original emails were deleted as soon as data analysis was complete. The Excel data file is scheduled for deletion six months after graduation. These precautions were essential because the participants’ responses were anticipated to include criticism of local resource provision and library staffing; identity disclosure therefore had the potential to cause embarrassment, stress or anxiety (Gray, 2013, p. 74). The survey did not require personal demographic data.

## **3.9 Data analysis**

### **3.9.1 Thematic data analysis protocol**

Thematic analysis was used to identify patterns within the qualitative data set (Braun & Clarke, 2006, pp. 87-93). Thematic analysis is said to work well with explorative research questions, especially those focusing on participants’ perceptions and attitudes (Braun & Clarke, 2013, p. 120). It suits small data sets and inductive reasoning because of the in-depth data-driven coding process (Braun & Clarke, 2013, p. 122). The researcher’s active role in data coding and interpretation is recognised so it fits well with reflexive studies (Braun & Clarke, 2006, pp. 78-81). It also facilitates exploration of the assumptions and meanings underpinning the raw data so it is particularly suited to an interpretivist and constructionist philosophical stance (Braun & Clarke, 2006, pp. 84-86).



**Table 16: Thematic analysis protocol**

<b>Thematic analysis protocol (Braun &amp; Clarke, 2006, pp. 87-93)</b>	
<b>Phase 1: “Familiarising yourself with your data”</b>	<ul style="list-style-type: none"> <li>• Although thematic concepts from the literature review were used for guidance during the initial stages of coding, there was no a priori theorising</li> <li>• Data from the open questions was read and re-read to provide an overview</li> <li>• Key sentences were colour-coded in relation to the overarching themes identified within the literature review; motivators (purple), information resources (blue) and barriers (orange). These formed the top hierarchy of the coding frame (appendix K) in preparation for detailed data-driven analysis</li> </ul>
<b>Phase 2: “Generating initial codes”</b>	<ul style="list-style-type: none"> <li>• Linguistic sub-codes were allotted to each colour-coded sentence. These related to the themes and subthemes discerned in the literature review</li> <li>• A third reading was conducted to generate sub-codes inductively</li> <li>• When one sentence related to numerous codes it was coded more than once</li> <li>• Coded data was underlined inclusively to preserve the surrounding context</li> <li>• Coding concluded once theoretical saturation was reached</li> </ul>
<b>Phase 3: “Searching for themes”</b>	<ul style="list-style-type: none"> <li>• A theme was defined as a “patterned response or meaning within the data set” that captured the participants’ perceptions of their information needs (Braun &amp; Clarke, 2006, p. 84; Bryman, 2008, p. 168)</li> <li>• All of the coded extracts (appendix L) were collated together under potential themes and subthemes</li> <li>• Through a thematic map (appendix M) relationships between themes and subthemes became evident</li> </ul>
<b>Phase 4: “Reviewing themes”</b>	<ul style="list-style-type: none"> <li>• The coded data extracts were re-read to ensure that the codes within each theme formed a coherent pattern</li> <li>• The validity of the thematic map was then considered in relation to the total qualitative data set</li> <li>• The thematic map was member-checked for accuracy of interpretation</li> </ul>
<b>Phase 5: “Defining and naming themes”</b>	<ul style="list-style-type: none"> <li>• The salient points of the collated data extracts within each theme and subtheme were summarised</li> <li>• Thematic definitions were finalised</li> <li>• Associations between themes were sought</li> </ul>
<b>Phase 6: “Producing the report”</b>	<ul style="list-style-type: none"> <li>• The data was presented through verbatim quotations to demonstrate the significance of each theme and the internal validity of the data analysis procedure</li> </ul>

### **3.9.2 Non-parametric descriptive data analysis protocol**

Gray’s (2013, pp. 554-565) process for non-parametric descriptive quantitative data analysis was followed. This was appropriate because the study was explorative and inductive, the sample was not considered representative of the total population, the research did not seek to establish causation and the findings were not intended to be generalisable. It also enabled tabulated and graphical summarisation of the quantitative data set, through which it became possible to infer patterns of meaning that were not apparent within the raw data.

**Table 17: Non-parametric descriptive data analysis protocol**

<b>Non-parametric descriptive data analysis</b> (Gray, 2013, pp. 554-565)	
<b>Phase 1: Categorising data</b>	<ul style="list-style-type: none"> <li>• All of the data from the closed questions was nominal. It could not be quantified numerically because it consisted of named values with no order or ranking implied</li> <li>• The questionnaire did not produce any dichotomous or ordinal data (categorical)</li> <li>• The questionnaire did not produce any interval or ratio data (quantifiable)</li> </ul>
<b>Phase 2: Data matrices</b>	<ul style="list-style-type: none"> <li>• The data was transferred into a data matrix using Excel (appendix N)</li> <li>• Each column corresponded with a specific variable and each row referred to an individual participant through their identification number</li> <li>• The following values and labels were assigned when the data was coded for entry: 0= No, 1= Yes, DA= Did not answer, RE= Respondent error (too few or too many answers were selected)</li> <li>• Accuracy of data entry was ensured through cross-checking the values in the original emails against the values associated with each identification number</li> </ul>
<b>Phase 3: Data analysis and presentation</b>	<ul style="list-style-type: none"> <li>• Frequency distribution (univariate analysis): the percentage of responses for each value within each variable was calculated. Presentation of frequency distribution occurred in graphical form for each variable. Bar charts were chosen to present the nominal data because they illustrate the relative proportion of the different values in relation to the individual units of analysis</li> </ul>

### 3.10 Study limitations

The case study research strategy could be considered a limitation in terms of restricted external validity (Bryman, 2012, p. 71; Gray, 2009, p. 193). However, this was an inductive investigation undertaken from an interpretivist constructionist philosophical standpoint. As such, the findings were not intended to be generalisable to the total population (Gray, 2013, p. 181; Pickard, 2007, p. 60). Instead, internal validity and reliability were the chief methodological concerns.

Sampling procedure bias was explicitly acknowledged. The sample selection was entirely dependent on the key informant’s recommendation and the researcher’s subjective judgement regarding whether Institution A was likely to provide information-rich data. Another potential issue was the involvement of the key informant and faculty member in participant recruitment, as the purpose of the research may have become distorted during their explanations (Gray, 2013, p. 223). This limitation was offset through the “invitation to complete a questionnaire” (appendix J) which explained the study’s purpose and requirements in detail.

The limitations of the attached email questionnaire survey included; the potential barriers associated with opening, saving and returning the questionnaire as an attachment (time costs, incompatible

software or operating systems, computer illiteracy), accessibility issues (computer availability on placements, Wi-Fi access, no time to check emails due to clinical workload), doubts about email security (viruses, lack of anonymity for respondents), unfixed formatting (respondents' edits within the Word document may have resulted in the misalignment of questions and fixed answers), and that the pilot took place in print (the clarity of the instructions was a concern, as there was no time to alter the "tick" instructions to Word-compatible "x" notations in brackets) (Bryman, 2012, pp. 670-671; Gray, 2013, pp. 370-372). The majority of these limitations would have been offset through devising a web survey (SurveyMonkey offers participant anonymity, fixed formatting, and simple access and submission procedures) (Gray, 2013, pp. 370-372). However, this was not possible due to time constraints.

Thematic analysis was conducted on the qualitative data set with the following limitations in mind; coding was influenced by researcher subjectivity, the coding frame had the potential to decontextualise and fragment the data, some codes overlapped, and the demarcation of themes was interpretive and not objective (Braun & Clarke, 2006, p. 121; Bryman, 2008, p. 296). The following approach was taken to optimise internal validity; data analysis was undertaken inductively and reflexively, no causal connections were assumed during thematic development, the thematic map (detailed in 3.9.1) was member-checked for accuracy, and verbatim quotations were included in the write-up to validate the researcher's interpretations (Bryman, 2008, p. 599; Gray, 2013, pp. 612-614 & pp. 622-625; Pickard, 2007, p. 244). Data analysis protocols were also provided to ensure reliability (Gray, 2013, pp. 271-273).

### **3.11 Methodology conclusion**

This investigation is situated within the user-oriented research tradition. Like the majority of user-oriented research, its methodology is interpretivist, constructionist and inductive. The research strategy was a single case study. One institutional case (Institution A) was selected through non-probability purposive snowball sampling (one whole cohort, 27 students). The unit of analysis was individual OT students (Masters level, both library users and non-users). The research instrument was a mixed methods self-completion questionnaire, which was administered online via email attachment on 16<sup>th</sup> June 2016 by a faculty member from Institution A. Informed consent was gained through a written invitation to complete the questionnaire. Inductive thematic analysis and non-parametric descriptive data analysis were undertaken to identify patterns within the total data set.

A graphical summarisation of the quantitative data set is presented in Chapter Four alongside verbatim quotations for the qualitative data set.

## 4. Results

### 4.1 Introduction

Eight questionnaires were returned from the total sample of 27 OT students (a response rate of 23%). The following statistical results are only indicative and not statistically significant or generalisable. Thematic coding confirmed the presence of three overarching themes; motivators for information-seeking, preferred information resources and barriers inhibiting the satisfaction of needs (appendix M). These overarching themes were originally identified in the literature review (2.5) and formed the study's objectives (1.3.3). A number of smaller themes and subthemes emerged inductively (appendix M). These were reviewed in relation to the total data set. The qualitative and quantitative data is presented concurrently.

#### 4.2.1 Motivators for information-seeking (overarching theme 1)

The first overarching theme refers to the occupation-related tasks, goals and role requirements that prompted the students to look for information.

#### 4.2.2 Academic assignments (theme 1.1)

All of the participants sought information for academic assignments (fig. 1). Within the qualitative data set, two mentioned using the library for written assignments and two referenced information-seeking for verbal assignments:

*“Knowing how to search for information effectively & efficiently would save me time during assignments”* (respondent six)

*“when we have an assignment everyone wants the same book”* (respondent two)

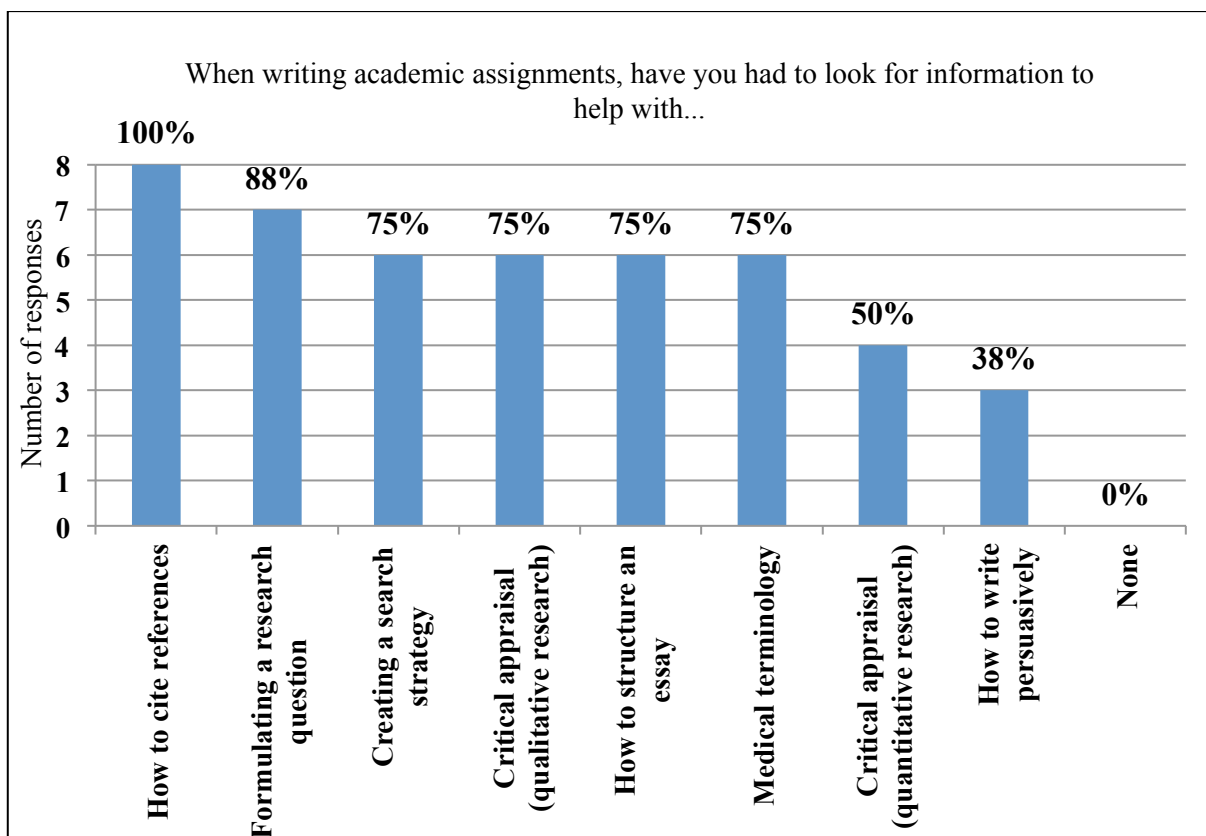
*“Forming presentations such as case studies to present to... students after placement”* (respondent six)

*“Presentations (e.g. techniques on delivery, layout, structure)”* (respondent five)

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The students identified a number of knowledge gaps and IL training needs in relation to completing academic assignments; formulating research questions, creating search strategies, critically appraising qualitative and quantitative research, structuring essays, citing references, medical terminology and writing persuasively (fig. 1).

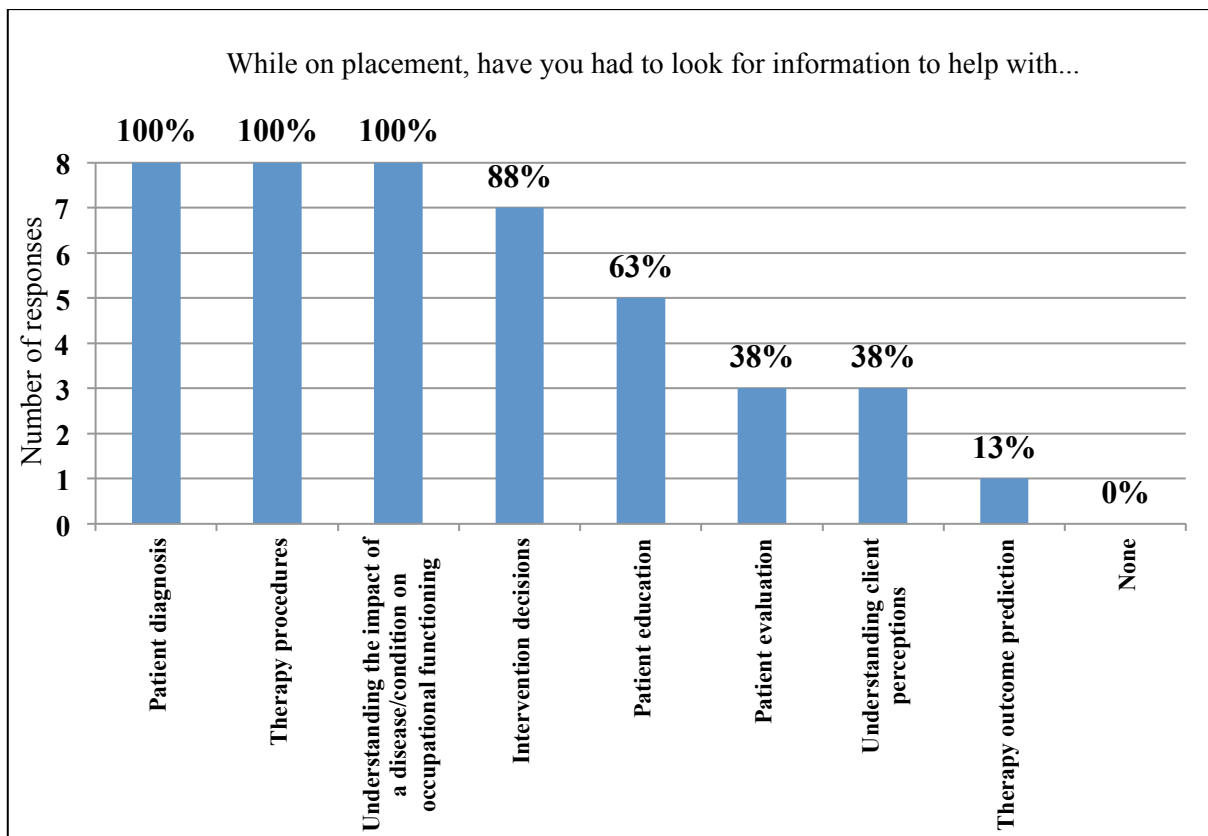
**Figure 1: Question 1.6 results summary**



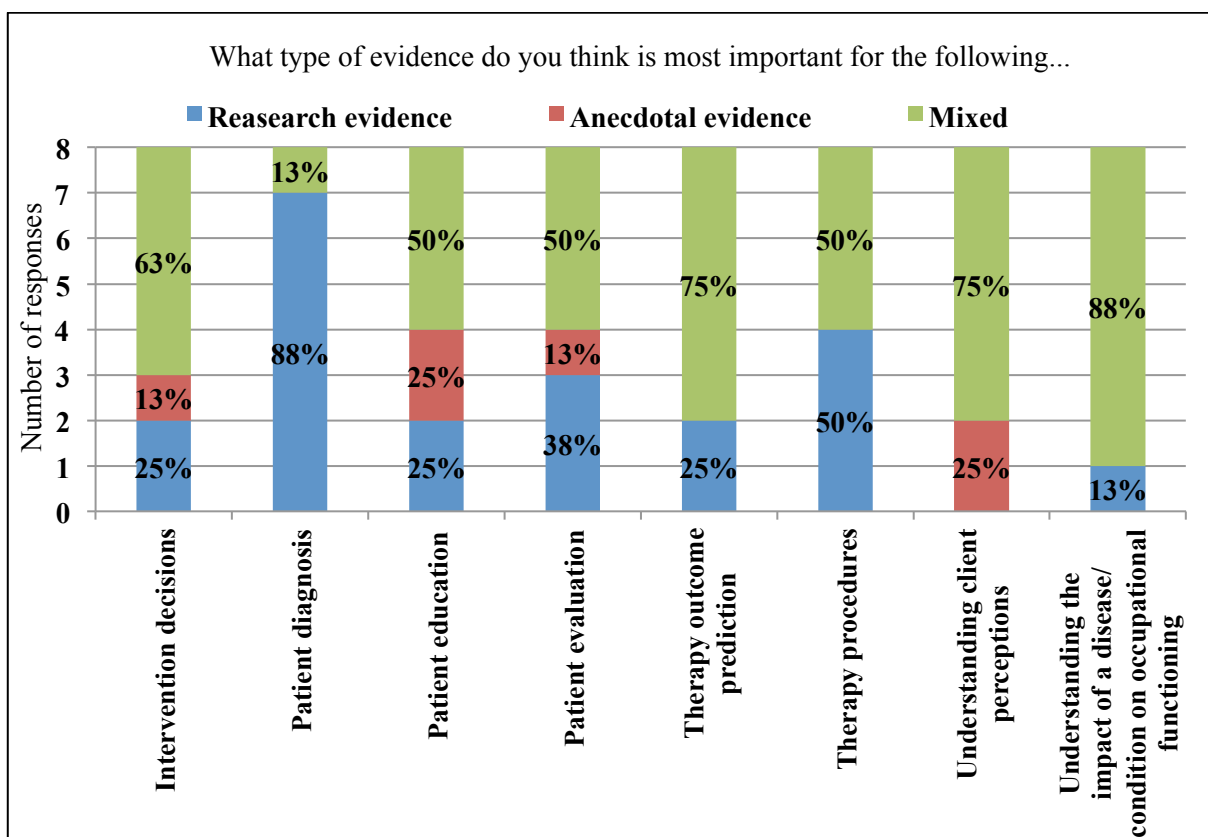
#### 4.2.3 Evidence-based practice (theme 1.2)

Information-seeking in support of EBP was identified as a motivator by all of the students (fig. 2). The quantitative data set inferred that EBP motivators are related to role requirements on clinical placements. A number of clinical tasks prompted the participants to look for evidence; patient diagnosis, assessment planning (through understanding the likely impact of a disease or condition on occupation functioning), patient evaluation, understanding client perceptions, intervention planning, therapy outcome prediction, undertaking therapy procedures and patient education (fig. 2). Figure 3 highlights the relative importance attributed to research evidence as a source of information for each of these clinical tasks.

**Figure 2: Question 1.1 results summary**



**Figure 3: Question 2.7 results summary**



The majority of these subthemes reoccurred within the qualitative data set:

*“Diagnosing conditions & understanding impacts of physical & mental conditions on functioning -Completing OT assessments such as personal care & kitchen assessments -how to conduct these assessments”* (respondent six)

*“Participation in ward rounds prompted me to look for info re: diagnoses, assessment procedures”* (respondent six)

*“OT students need a wide range of resources that cover patient diagnosis, prognosis, assessment procedures, outcome measurement tools”* (respondent six)

*“Writing intervention plans. Writing patient goals, such as SMART goals”*  
(respondent two)

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In addition, students sought background information on diseases and conditions when “reading referral letters... [and] assessment reports”, “applying models of practice” to patient assessments, and “prescribing equipment such as daily living aids” (respondents four, five and two). These clinical tasks reportedly required an understanding of anatomy, the “medical model of health”, “medication side effects”, medical and nursing terminology, nursing procedures and medical prognoses (respondents four, three and six). The participants’ comments implied a perceived division between standardised and non-standardised evaluation and intervention techniques; procedural research evidence was required “particularly if the assessment [was] standardized” (respondent two). The types of information needed for assessment and intervention planning were loosely categorised by physical capabilities, cognitive processing and functional activities.

Database searching and critical appraisal skills were considered extremely important within the context of applying evidence to clinical practice. When asked “how do you evaluate whether research evidence is useful for a specific patient case”, respondents referred to filtering evidence by research population, currency and quality:

*“relevance of the research to the patient in terms of the patient’s age, gender and background and diagnosis”* (respondent two)

*“the authority and background of the author – are they a specialist in their subject area? Is the work up to date and still clinically relevant?”* (respondent five)

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Clinical relevance was defined by whether the research evidence was occupation focussed, holistic, client-centred and applicable to the local clinical setting:

*“evidence that is occupation focused and focuses on the person as a whole”*  
(respondent two)

*“therapeutic means specifically related to engagement in occupation”*  
(respondent seven)

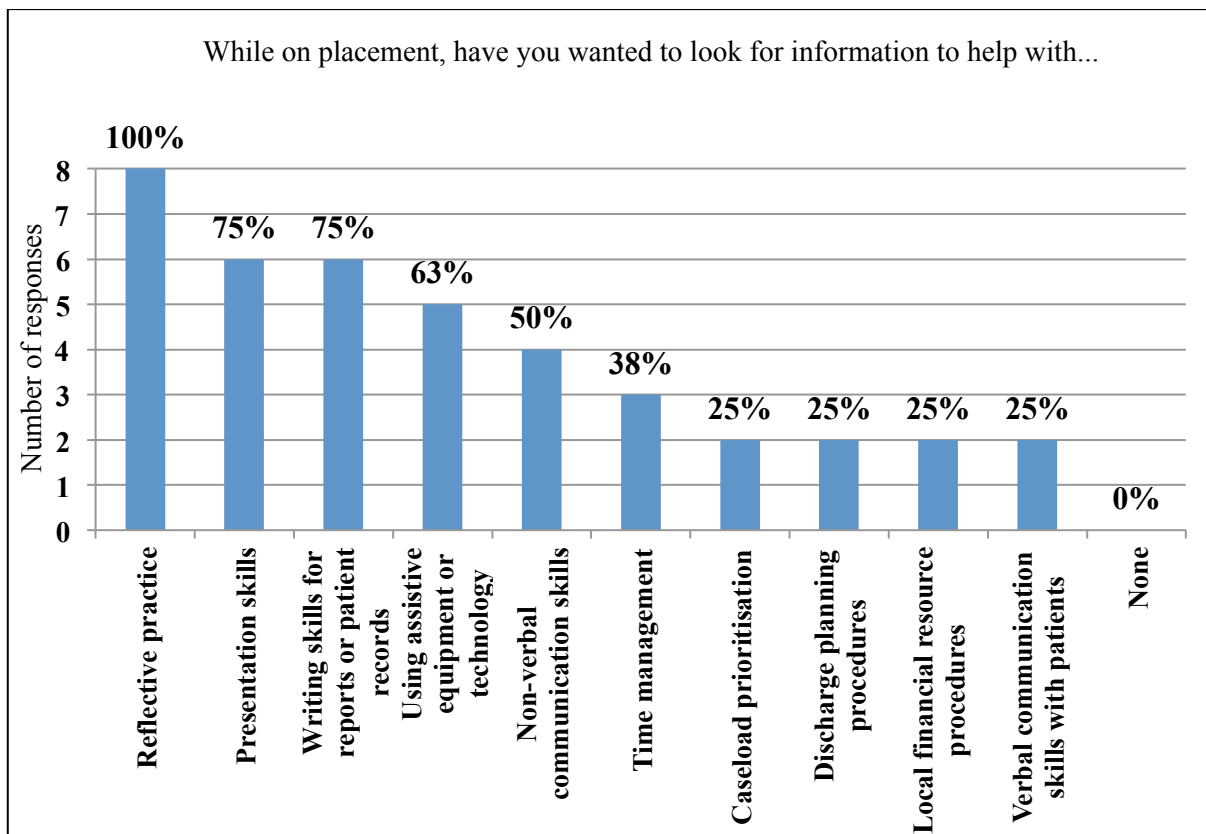
*“Relevance of the research to the hospital environment”* (respondent six)

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#### **4.2.4 Workplace skills (theme 1.3)**

The development of workplace skills was an information-seeking motivator for 100% of the respondents (fig. 4). Soft skills were mentioned the most frequently. While on placement, at least 50% of the students wanted information on presentation skills, clinical writing skills and non-verbal communication skills (fig. 4). This was reportedly related to non-clinical role requirements such as; “writing case notes”, “report writing”, “record keeping”, “recording minutes from meetings”, “writing discharge letters to GPs” and presenting “case studies...to OT colleagues” (respondents five, three, one, two and six).

**Figure 4: Question 1.2 results summary**



Other soft workplace skills that prompted information-seeking were; reflective practice, time management and caseload prioritisation (fig. 4). Career development was mentioned by one participant who required “career information and signposting to help students and graduates find jobs” (respondent six). The ability to work in a multi-disciplinary team through understanding staff roles was another motivator:

*“Participation in ward rounds prompted me to look for info re: ...role of other professionals such as social workers, physiotherapists and mental health nurses”*  
(respondent six)

*“working with other professionals such as physios to understand their role”*  
(respondent five)

Resources management and using assistive equipment were the only hard workplace skills referenced by the students; 63% wanted practical information on assistive aids, 25% required guidelines for local financial procedures, and 25% indicated knowledge gaps relating to patient discharge planning (fig. 4).

### **4.3.1 Preferred information resources (overarching theme 2)**

The second overarching theme relates to the perceived usefulness and applicability of specific categories of information resources, in relation to the motivators for information-seeking identified in Chapter 4.2 and the barriers to needs resolution reported in Chapter 4.4.

### **4.3.2 Human information resources (theme 2.1)**

The majority of students placed value on anecdotal evidence within the clinical environment, particularly in relation to “understanding client perceptions” and “understanding the impact of a disease/condition on occupational functioning” (fig. 3). Clinical colleagues (supervisors and senior OTs especially) were the most popular resources for questions about patient assessment or care (fig. 5); peers and patients were also referenced (fig. 5). The following free-text responses reflect similar preferences. Librarians were mentioned once within the context of completing academic assignments:

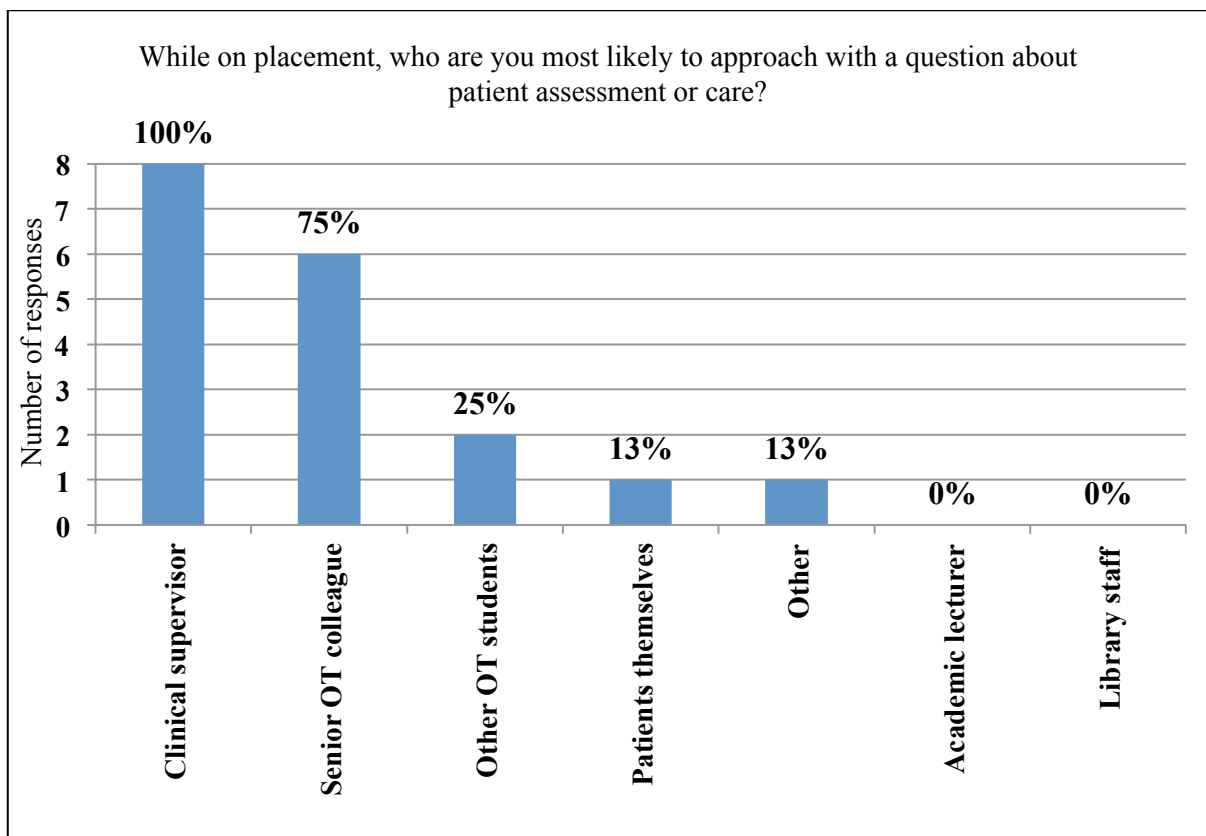
*“Chat with supervisor”* (respondent four)

*“nurses/ physios/ consultants/ health care assistants”* (respondent four’s answer to question 2.1, coded as “other”)

*“Librarians who have expert knowledge of all databases”* (respondent three)

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**Figure 5: Question 2.1 results summary**



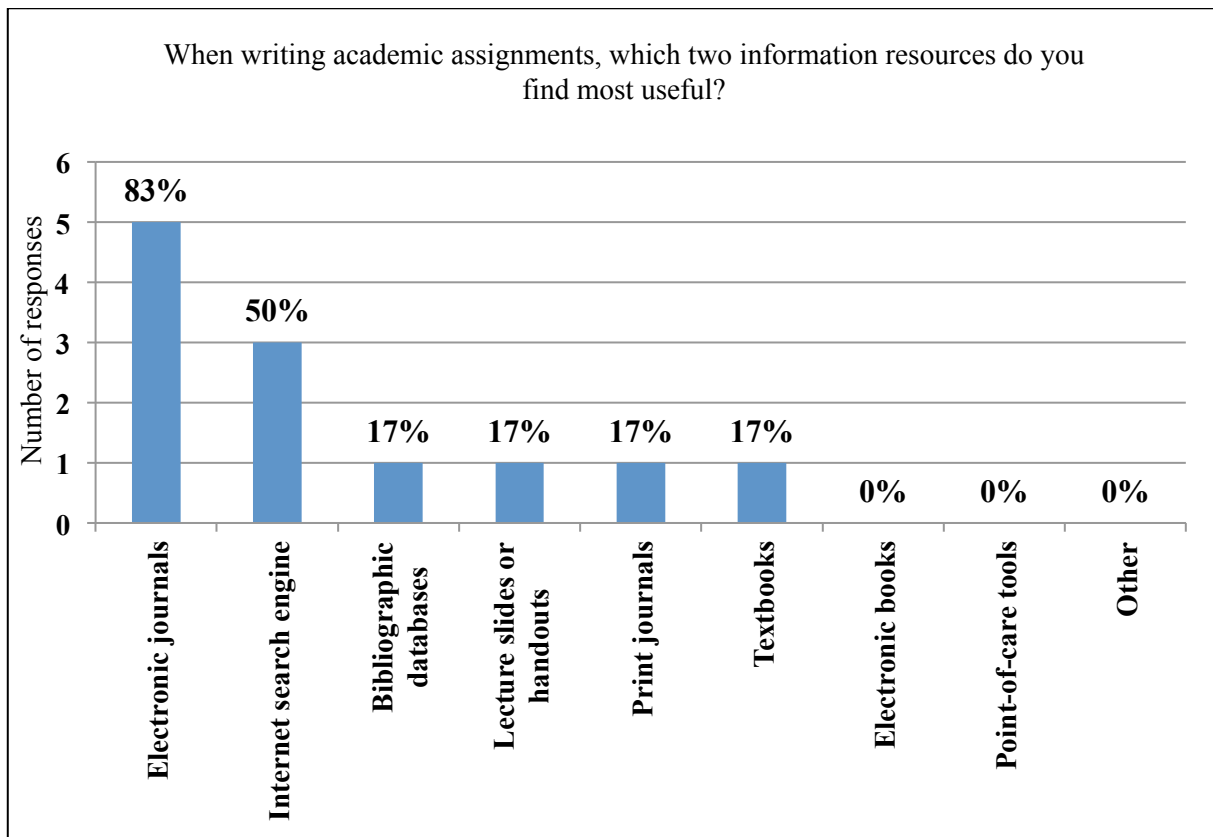
#### **4.3.3 Printed information resources (theme 2.2)**

None of the students explicitly commented on printed books as an evidence source, although their perceived usefulness was implied through the accessibility and availability barriers cited in Chapter 4.4. There was only one free-text remark about printed journals:

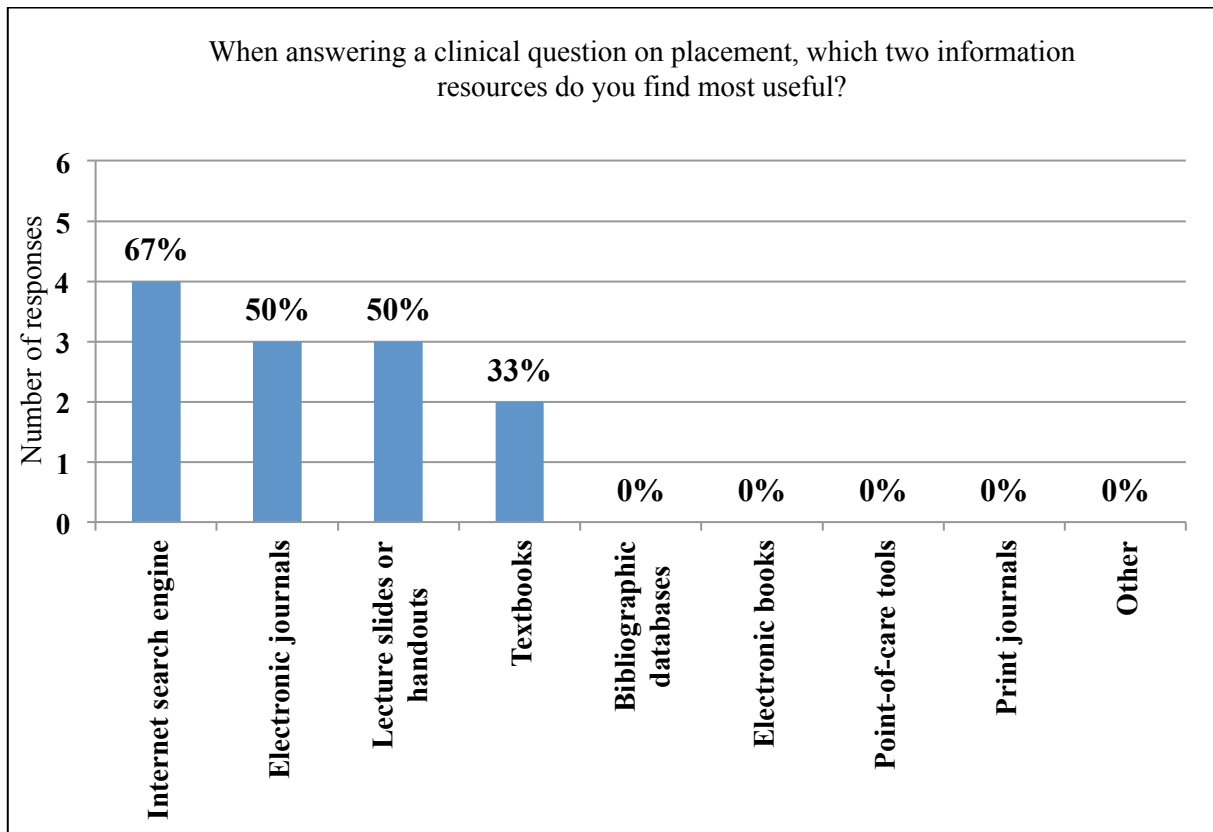
*“I like having journals to hand however, having easy access online would also be beneficial”* (respondent seven)

Printed journals and textbooks were considered the least useful information resources for writing academic assignments, alongside lecture slides and handouts (fig. 6). However, 33% of the participants cited textbooks as useful for answering clinical questions on placement (lecture slides and handouts were selected by half of the students and print journals received no positive responses) (fig. 7).

**Figure 6: Question 2.2 results summary**



**Figure 7: Question 2.3 results summary**

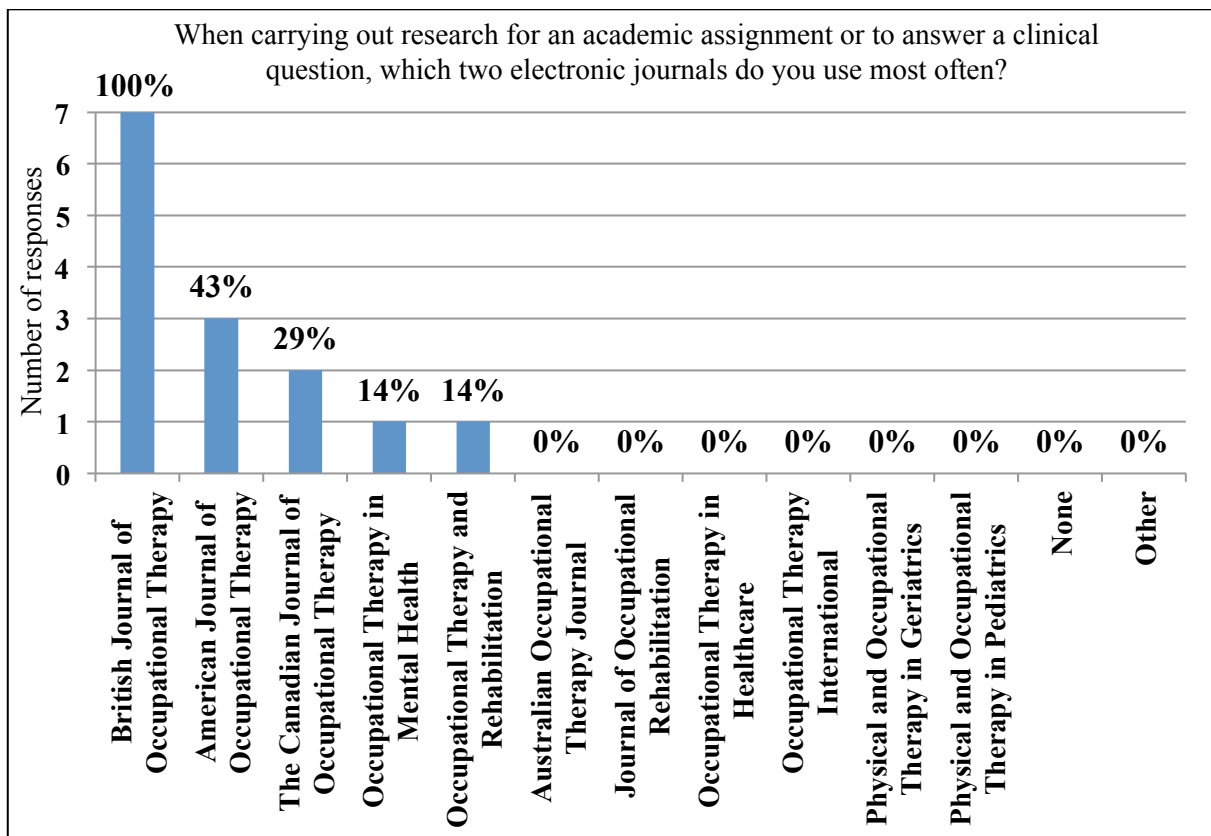


#### 4.3.4 Electronic information resources (theme 2.3)

Most of the respondents indicated a preference for internet search engines and e-journals as information sources for writing academic assignments and answering clinical questions (fig. 6 and fig. 7). Google was specifically mentioned by respondent four. The most popular e-journal titles are illustrated in figure eight. These results largely correspond with participant seven's comment:

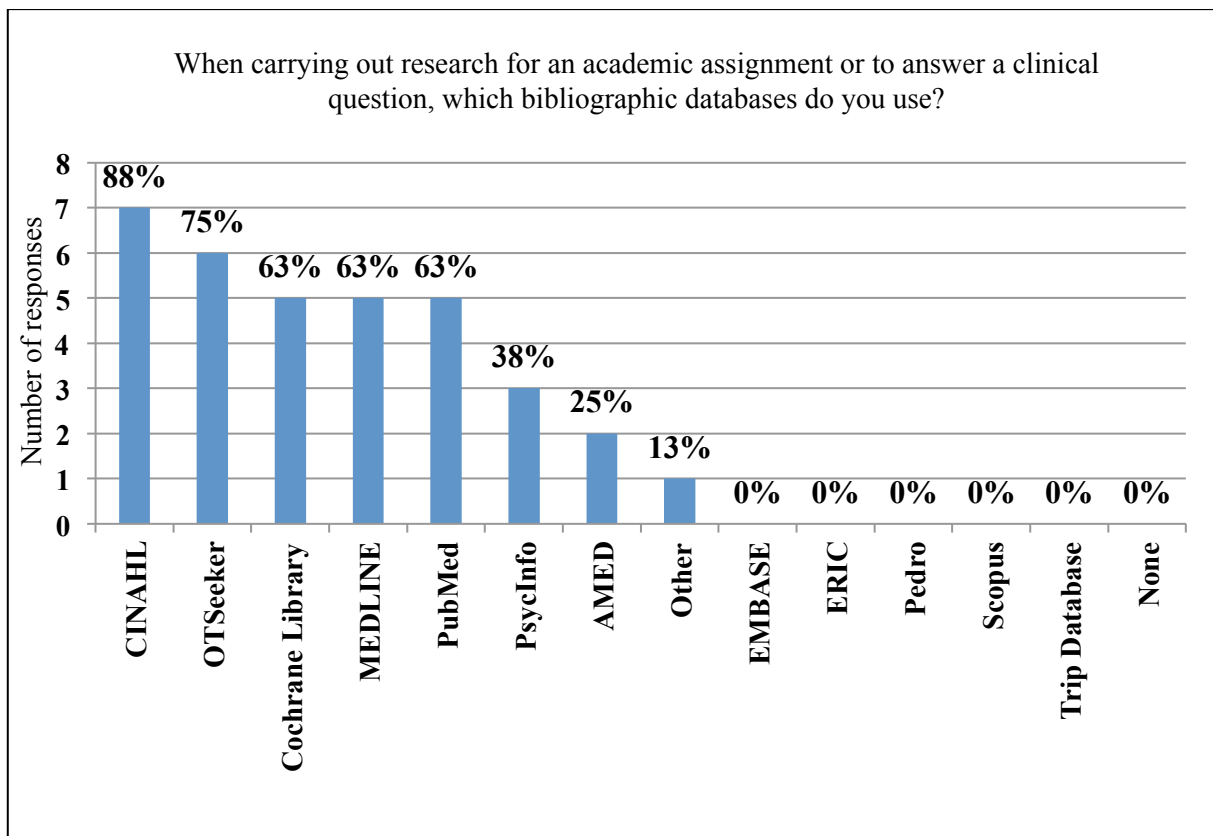
*"Full range of journals from British, American, Canadian, Australian Journal of Occupational Therapy would be useful"*

**Figure 8: Question 2.5 results summary**

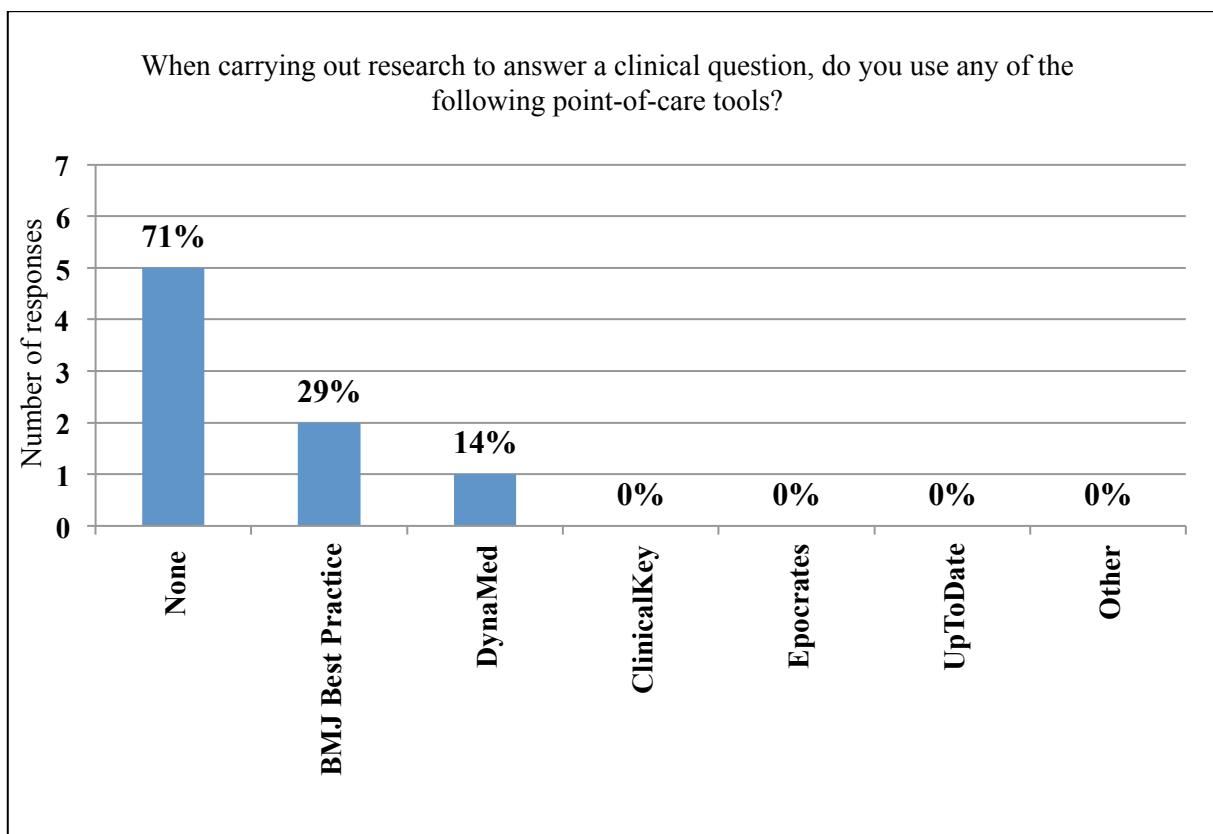


None of the free-text replies referred to bibliographic databases. Even so, 100% responded positively when asked to specify which bibliographic databases they used for assignments and clinical questions (fig. 9). CINAHL and OTSeeker were the most popular choices, followed by the Cochrane Library, MEDLINE and PubMed (fig. 9). The majority of the respondents stated that they did not use point-of-care tools during clinical practice (fig. 10).

**Figure 9: Question 2.4 results summary**



**Figure 10: Question 2.6 results summary**



#### **4.4.1 Barriers inhibiting the satisfaction of needs (overarching theme 3)**

The students identified a number of contextual barriers within their occupational environment which were perceived to inhibit the resolution of their information needs.

#### **4.4.2 Information literacy skills (theme 3.1)**

Each respondent reported at least one IL training need (subtheme 3.1.1); 43% experienced difficulties with formulating research questions, filtering search results through limits and locating full-text articles (fig. 11). Almost one-third identified the following barriers; creating search strategies, searching databases, retrieving too many results and evaluating research evidence (fig. 11). The qualitative data set reflected similar IL skills gaps while also touching on the issue of information-seeking confidence (subtheme 3.1.2):

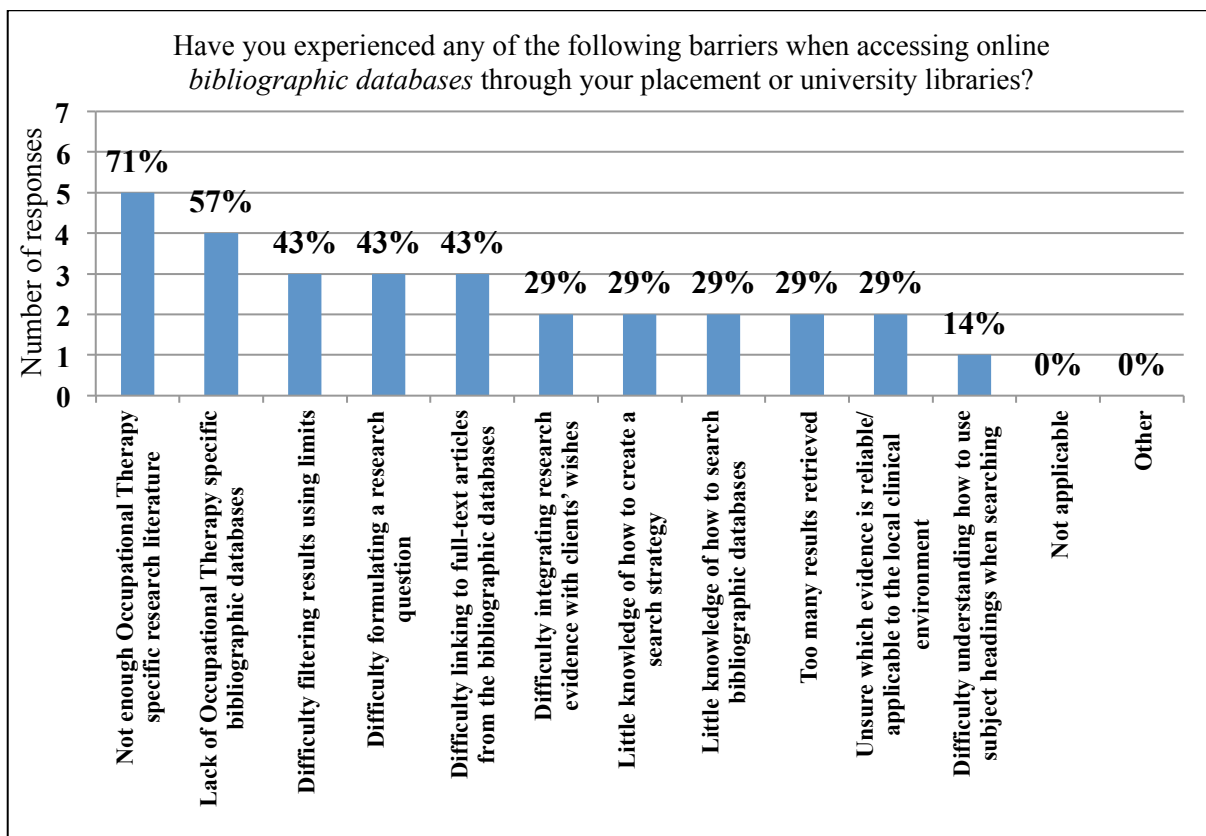
*"Librarians available to help students search for specific research articles, locate resources, build search strategies and build confidence within the library environment"* (respondent two)

*"Regular sessions that focus on formulating search strategies & how to search databases. We had one training session at university with the library but required more practice & tuition"* (respondent six)

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**Figure 11: Question 3.3 results summary**



#### 4.4.3 Accessibility (theme 3.2)

Accessibility of information resources (subtheme 3.2.1) and library services (subtheme 3.2.2) was a significant problem for many of the students. When asked about barriers to accessing printed books, over half of the respondents cited the inconvenient location and opening hours of their local library (fig. 12). Insufficient copies of books was a further problem (fig. 12). The same issues reoccurred in the free-text replies alongside comments about inadequate signage and limited study space:

*“everyone wants the same book...which means long wait times or not using that book at all”* (respondent two)

*“Longer & more appropriate opening hours”* (respondent six)

*“24 hour opening”* (respondent four)

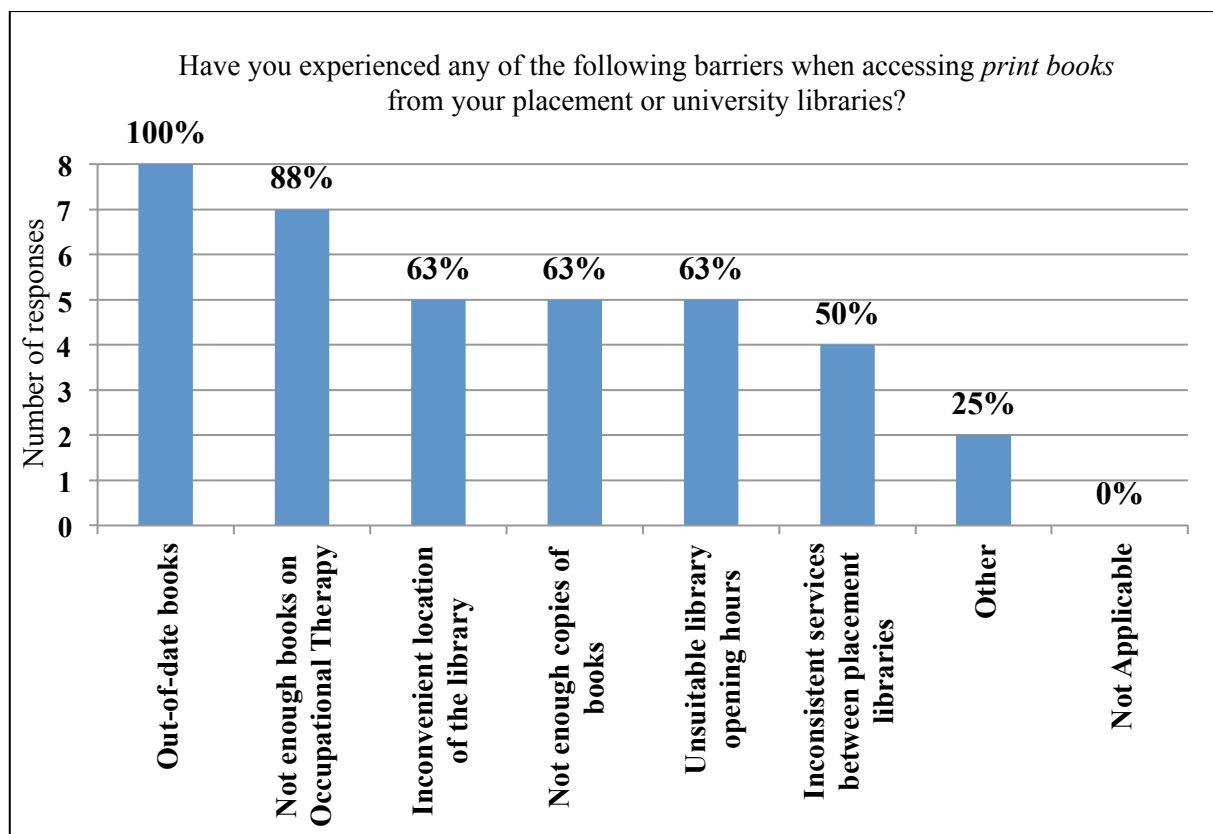
*“A library that is open longer than 9-5 that can be accessed in the evenings and at weekends”* (respondent two)

*“Clear OT sections with relevant up to date resources”* (respondent eight)

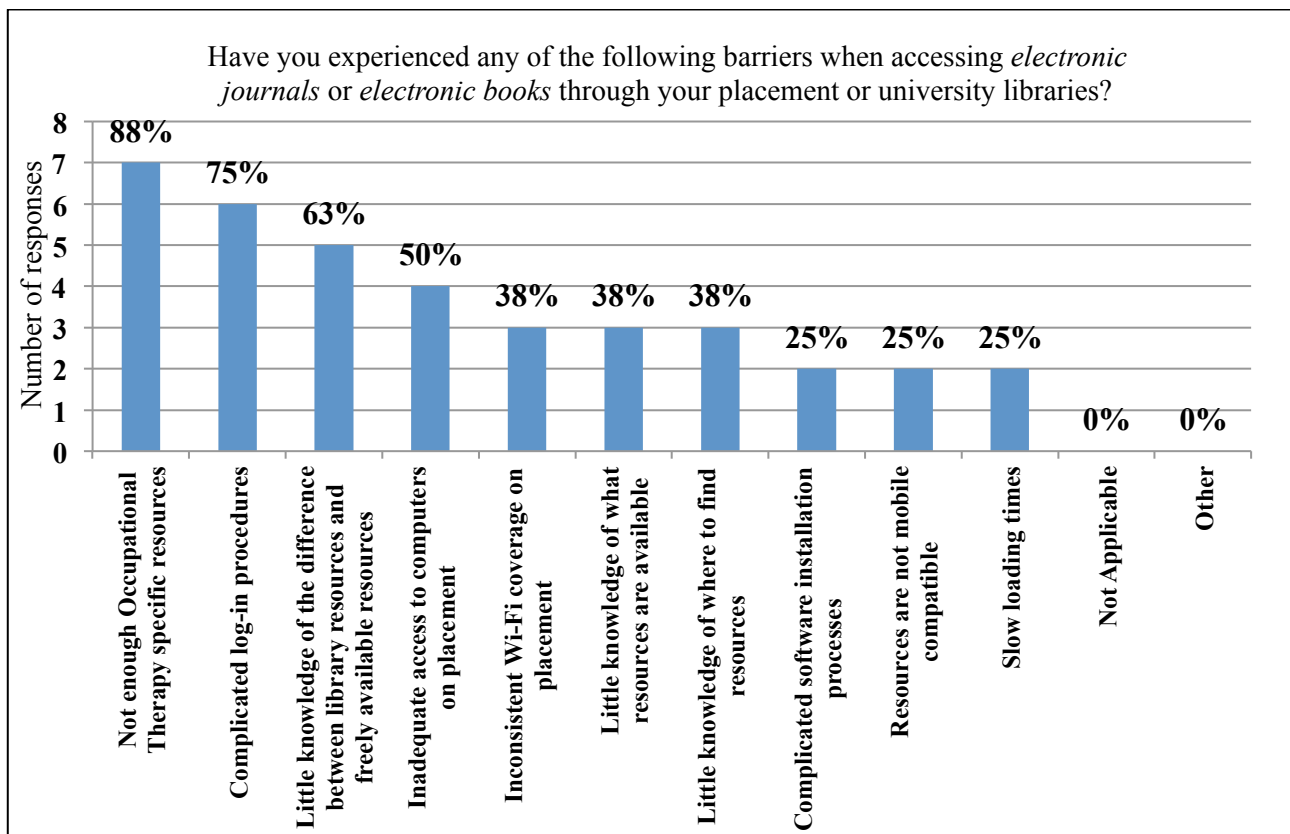
*“Good space and facilities to work in such as desk space”* (respondent two)

The students' use of subscription e-resources was impacted by technological accessibility barriers. "Simple log in procedures", "good access to computers" and "good internet coverage" were cited as priorities within both the qualitative and quantitative data sets (respondent two) (fig. 13). Other issues were complicated software installation processes, mobile incompatibility and slow loading times (fig. 13).

**Figure 12: Question 3.1 results summary**



**Figure 13: Question 3.2 results summary**



#### 4.4.4 Availability (theme 3.3)

Many respondents felt that the resources available through their local libraries did not meet their needs (subtheme 3.3.1). They were considered inappropriate to the local clinical setting, out-of-date, unrelated to Occupational Therapy practice in general, not specialty specific, and of limited scope (not holistic, with no mix of medical and sociological evidence) (fig. 12 and fig. 13):

*“Wide range of books, electronic resources, up to date books and relevant books, library services subscribed to all journals that OT students may need – not just some”* (respondent five)

*“OT specific resources required”* (respondent seven)

*“OT students need evidence that is more holistic and addresses a wide range of health conditions – both mental health conditions and physical illnesses”* (respondent two)

*“A range of up to date OT books”* (respondent two)

*“Wider range of journals”* (respondent four)

*“Access to full text articles”* (respondent two)

*“High level of databases to access”* (respondent three)

*“research applicable to an acute hospital ward environment or a rehab community setting”* (respondent six)

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A lack of clinically relevant research evidence (subtheme 3.3.3) was identified as an additional barrier by a large percentage of the students; 71% felt that there was not enough Occupational Therapy research literature, 57% agreed that there were not many Occupational Therapy specific bibliographic databases, and 29% struggled to integrate research evidence with client-centred Occupational Therapy practice (fig. 11). These barriers reoccurred within the qualitative data set. The students cited difficulties translating existing research into clinical practice, inadequate evidence relating to specific client groups, limited integration of mental and physical health evidence, lack of mixed methods research (qualitative evidence was required to understand client perceptions), under researched specialties, and little information on how specific conditions impact occupational functioning:

*“As OT is a relatively new profession...OT students need both research and anecdotal evidence”* (respondent two)

*“OT students need both qualitative and quantitative research that can be applied to practice”* (respondent two)

*“There is a major lack of resources for OT students as the profession is relatively unknown... we need in depth information covering many conditions and how this impacts on skills & performance in everyday activities - this research is lacking”* (respondent six)

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Inconsistent service availability (subtheme 3.3.2) across placement libraries was identified as a problem by half of the respondents (fig. 12). Lack of awareness of subscription resources (subtheme 3.4.1) and library services (subtheme 3.4.2) was a further issue; 63% stated that they had little knowledge of the differences between library resources and freely available resources and 38% said that they had little knowledge of which subscription resources were available (fig. 13).

#### **4.4.5 Library staff (theme 3.5)**

Three of the respondents explicitly stated that their librarians had limited awareness of Occupational Therapy as a distinct profession (subtheme 3.5.1). This impacted the perceived efficiency and effectiveness of the local library services:

*“Librarians not knowing about the role of the OT and the depth of service that OT covers”* (respondent six’s answer to question 3.1, coded as “other”)

*“Librarians that have a full understanding of the OT role, often little is known about the role and scope of practice which can be frustrating at times”* (respondent six)

*“Librarians that are aware of what OT is as it is a relatively unknown profession and many people are unaware of what we do”* (respondent two)

*“staff who understand what OT is”* (respondent five)

*“OT students often need the breadth of medical based information and sociological information due to its holistic nature, whereas other Health students may be more directed in resources needed”* (respondent one)

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#### **4.5 Results conclusion**

Thematic coding and statistical analysis confirmed the presence of the three overarching themes identified within the literature review (2.5). Other smaller themes and subthemes arose inductively:

##### **Motivators for information-seeking (overarching theme 1)**

Academic assignments (theme 1.1)

Written academic assignments (subtheme 1.1.1)

Verbal academic assignments (subtheme 1.1.2)

Evidence-based practice on clinical placement (theme 1.2)

Formulating a clinical question (subtheme 1.2.1)

Searching efficiently for the best available evidence (subtheme 1.2.2)

Critically analysing evidence (subtheme 1.2.3)

Workplace skills (theme 1.3)

Soft workplace skills (subtheme 1.3.1)

Hard workplace skills (subtheme 1.3.2)

## **Preferred information resources (overarching theme 2)**

Human information resources (theme 2.1)

Colleagues (subtheme 2.1.1)

Peers (subtheme 2.1.2)

Patients (subtheme 2.1.3)

Librarians (subtheme 2.1.4)

Printed information resources (theme 2.2)

Electronic information resources (theme 2.3)

## **Barriers inhibiting the satisfaction of information needs (overarching theme 3)**

IL skills (theme 3.1)

Training needs (subtheme 3.1.1)

Information-seeking confidence (subtheme 3.1.2)

Accessibility (theme 3.2)

Resources (subtheme 3.2.1)

Services (subtheme 3.2.2)

Availability (theme 3.3)

Resources (subtheme 3.3.1)

Services (subtheme 3.3.2)

Lack of evidence (subtheme 3.3.3)

Lack of awareness (theme 3.4)

Resources (subtheme 3.4.1)

Services (subtheme 3.4.2)

Library staff (theme 3.5)

Staff awareness of Occupational Therapy (subtheme 3.5.1)

These findings are discussed in Chapter Five in relation to the existing research evidence (2.3-2.5) and the study's aim and objectives (1.3.2-1.3.3).

## **5. Discussion**

### **5.1 Introduction**

This case study aimed to explore the information needs of Masters level OT students at a COT accredited university in England (Institution A). It sought to identify the students' motivators for information-seeking, which information sources were used and why and the barriers inhibiting the satisfaction of information needs. A number of interrelated themes and subthemes were found. Chapter Five evaluates whether these findings are consistent with the existing research evidence on OT students. Recommendations for practice are also provided.

### **5.2 Summary of findings**

#### **5.2.1 Objective one: Motivators for information-seeking**

The completion of academic assignments was a primary task-related motivator for information-seeking. Consistent with previous findings (Cohn et al., 2014, pp. S77-S79; Villeneuve & Maranda, 2005, pp. 13-19) specific IL training needs were identified; formulating research questions, developing search strategies, and critical appraisal (qualitative and quantitative). The participants also placed emphasis on the acquisition of writing proficiency skills (structuring essays, citing references, writing persuasively), presentation skills (delivery techniques, slide design) and understanding medical terminology. For Institution A's students, the need for information to bridge clinical knowledge gaps became most apparent during placements. In contrast, Cohn et al (2014, pp. S77-S79) and Villeneuve and Maranda (2005, pp. 13-19) identified the following assignment-related motivators for information-seeking; practitioner-client communication, patient education techniques, physical and cognitive clinical presentation, and intervention evidence and outcomes data.

The second principal motivator was information-seeking in support of EBP while on clinical placement. As in earlier studies (Evenson, 2013, p. 299; Stronge & Cahill, 2012, pp. 9-12; Stube & Jedlicka, 2007, pp. 56-58; Villeneuve & Maranda, 2005, pp. 13-19) the clinical tasks prompting the students to look for evidence were; patient diagnosis, assessment planning (standardised and non-standardised), patient evaluation, understanding client perceptions, intervention planning (standardised and non-standardised), therapy outcome prediction, undertaking therapy procedures, and patient education. The two clinical role requirements that did not arise within the research literature were understanding medical referral reports and prescribing assistive equipment. As such, the EBP-related information needs of Institution A's students also covered background information

on medical and nursing terminology, anatomy, medical models of health, medication side effects, nursing procedures and medical prognoses. As noted in other studies (Evenson, 2013, p. 299; Stronge & Cahill, 2012, pp. 9-12; Stube & Jedlicka, 2007, pp. 56-58; Villeneuve & Maranda, 2005, pp. 13-19), the perceived clinical relevance of information was dependent upon whether the research was occupation focussed (related to physical, cognitive or functional Occupational Therapy models of practice), holistic (inclusive of physical and mental conditions and sociocultural factors), client-centred (incorporating patients' perceptions and opinions) and applicable to the local clinical setting. Accordingly, Institution A's students prioritised source filtering and critical appraisal IL skills to ensure that research evidence was applicable to specific patient populations (gender, age, sociocultural background, stage of illness or condition, and qualitative research to understand clients' perceptions of occupational functioning).

The development of soft and hard workplace skills was also identified as a motivator for information-seeking. In common with Dancza et al. (2013, pp. 427-433) the following skills were cited; verbal communication (presenting patient case studies, talking with patients), time management, caseload prioritisation, reflective practice and resources management (financial procedures, discharge planning). Other skills discerned by the participants from Institution A but not explicitly mentioned by Dancza et al. (2013) were non-verbal communication (body language, active listening), comprehensive writing (clinical reports, case notes, record keeping, minute taking, discharge letters), team-working (understanding the roles of other healthcare professionals), career development and using assistive equipment.

### **5.2.2 Objective two: Which information resources are used and why**

The students' preferred information resources were related to their occupational role requirements (5.2.1) and the contextual barriers to needs resolution identified in Chapter 5.2.3. Three categories of information resources were discerned; human (colleagues, peers, patients, librarians), printed (textbooks, journals, lecture slides and handouts) and electronic (e-journals, e-books, bibliographic databases, non-subscription e-resources). Data on the perceived usefulness of these resources is relatively absent from the research literature. Kipnis and Frisby (2006, pp. 14-16) noted that OT students tended to approach peers (36%) and the library (20%) for help, while Villeneuve and Maranda (2005, p. 14) found that textbooks were used to bridge general knowledge gaps for assignments. E-journals were used by students in three studies (Cohn et al., 2014, pp. S73-S78; Stube & Jedlicka, 2007, p. 58; Villeneuve & Maranda, 2005, p. 17) for consolidating background knowledge on patients' diagnoses, conditions and intervention planning. Only Villeneuve and



Maranda (2005, p. 17) referred to student usage of bibliographic databases (MEDLINE, CINAHL, Health and Psychosocial Instruments, Cochrane Library).

Within the present study the students used a mixture of all three categories for clinical tasks. This reflects the perceived importance of integrating anecdotal and research evidence into Occupational Therapy practice. For questions relating to patient assessment and care the respondents conveyed a clear preference for anecdotal evidence from clinical supervisors and senior OTs. Colleagues' advice was considered easily accessible, authoritative, and contextually applicable to the local clinical and sociocultural environment. In contrast to Kipnis and Frisby's (2006, pp. 14-16) results, only 25% of the respondents selected peers and none chose library staff. Published research evidence was most often accessed through internet search engines despite the fact that the students recognised the importance of using reputable source material to answer clinical questions. E-journals were ranked second to internet search engines but were still highly valued for clinical tasks (corroborating (Cohn et al., 2014, pp. S73-S78; Stube & Jedlicka, 2007, p. 58; Villeneuve & Maranda, 2005, p. 17)). None of the respondents explicitly reported searching bibliographic databases during clinical practice, inferring that the perceived complexity of accessing databases made them unsuitable for the fast-paced clinical environment. Similarly, the majority of the participants did not use point-of-care tools during placements. This can perhaps be explained by the students' conceptualisation of clinical relevance (detailed in 5.2.1) in comparison to the medical focus of point-of-care tools. However, the participants' clinical information needs also extended to understanding medical referral reports, medication side effects and medical prognoses (as noted in 5.2.1). This implies that the students were either unaware of local subscriptions or that the potential applications of point-of-care tools within Occupational Therapy practice were unrecognised. In terms of printed resources, textbooks and lecture slides or handouts were used to answer questions on placements, but were considered far less useful for writing academic assignments (unlike Villeneuve and Maranda's (2005, p. 14) findings). This apparent inconsistency can perhaps be attributed to the barriers associated with accessing subscription e-resources while on placement.

The preferred information resources for non-clinical academic tasks were e-journals (named titles included the British, American and Canadian Journals of Occupational Therapy), followed by internet search engines and bibliographic databases. The popularity of internet search engines for both clinical and non-clinical tasks indicates that the students placed value on simple, familiar search interfaces requiring minimal time and cognitive costs. The utilisation of bibliographic databases for assignment writing, but not within clinical practice, further suggests that time constraints imposed by

clinical tasks acted as an accessibility barrier for resources with more complex search interfaces. In accordance with Villeneuve and Maranda (2005, p. 17), the students used an interdisciplinary mix of bibliographic databases when carrying out research. CINAHL (nursing, allied health) and OTSeeker (Occupational Therapy) were cited most frequently, alongside the Cochrane Library (Medicine), MEDLINE (life sciences, health, medicine), PubMed (life sciences, health, medicine) and PsycINFO (psychology). This wide-ranging subject coverage was most likely due to the multidisciplinary nature of Occupational Therapy practice and the relative dearth of Occupational Therapy specific research evidence in comparison with other healthcare fields. PubMed and the Cochrane Library do not require institutional subscriptions but are indexed by Google, which perhaps explains the seemingly incongruous use of internet search engines by participants with such high regard for EBP.

### **5.2.3 Objective three: Barriers inhibiting the satisfaction of information needs**

The students identified five contextual barriers that were perceived to inhibit the resolution of their information needs; library staff, IL skills, lack of awareness, and the accessibility and availability of library resources and services.

Library staff were only mentioned once within the context of preferred information resources, in a free-text comment about the importance of librarians' database searching expertise in relation to academic assignments. This could be attributed to the fact that over one-third of the respondents stated that their librarians had limited awareness of Occupational Therapy as a distinct profession. With little knowledge of OTs' role requirements, the students felt that library staff did not understand the differences between their information needs and those of other healthcare students. The most significant difference was the need for evidence that is occupation-focussed, holistic (physical capabilities, cognitive processing, functional activities), client-centred, multidisciplinary, mixed methods, both standardised (published, procedural) and non-standardised (anecdotal), applicable to the local sociocultural environment and appropriate for the local clinical setting (hospital, community based). In consequence, library staff-mediated services were seen as fairly irrelevant in terms of day-to-day Occupational Therapy practice. This negative perception was exacerbated by lack of awareness of local library resources and services. Kipnis and Frisby (2006, pp. 14-16) made a similar observation, concluding that lack of personal contact with library staff negatively impacted students' awareness of librarians' reference expertise, as well as their willingness to approach the library with questions.

All of the students recognised the importance of IL skills in relation to EBP on clinical placement. However, the irregular and infrequent training sessions offered by Institution A's University library was considered a significant barrier to the acquisition of IL skills. Consistent with Cohn et al. (2014, p. S76) the students noted the following training needs; formulating searchable questions, developing search strategies, choosing relevant databases, using limits to improve search precision, locating full-text articles, critical appraisal (qualitative and quantitative) and improving information-seeking confidence. In contrast with the research literature (Stronge & Cahill, 2012, pp. 11-13; Stube & Jedlicka, 2007, p. 58), organisational culture within placement institutions was not identified as a barrier to the satisfaction of information needs. This implies that attitudes to research utilisation during clinical practice were fairly positive.

The accessibility of printed and electronic library resources was a further barrier. Although data relating to this subject was absent from the research literature on OT students, the survey results strongly suggest that the perceived usefulness of library resources was linked to ease of access. The physical location of libraries in relation to clinical placements was considered a barrier to printed information resources, alongside unsuitable opening hours (24-hour access was the ideal). Heavy workloads and time constraints during clinical practice intensified the impact of these barriers. Three accessibility barriers were identified within the libraries themselves; inadequate signage for Occupational Therapy print collections, limited study space, and an insufficient number of copies of core textbooks (possibly reflecting a need for placement librarians to liaise with universities for up-to-date student numbers and clinical reading lists). The popularity of textbooks amongst students on clinical placement was most likely due to the technological barriers associated with accessing subscription e-resources remotely. The following problems were identified by at least one-quarter of the respondents; complex log-in procedures, inconsistent Wi-Fi coverage, complicated software installation processes, slow loading times, mobile incompatibility and a lack of computers. These issues imply a need to simplify access to e-resources through the provision of one user-friendly authentication system, downloadable content, mobile compatible apps, and materials that provide concise clinically relevant information.

The final barrier inhibiting the satisfaction of the participants' information needs was the availability of resources and services. None of the older studies on OT students explicitly referred to availability barriers. However, the majority of the students from Institution A felt that their local resources were often out-of-date, limited in scope, unrelated to Occupational Therapy practice, not specialty specific and inapplicable to the local clinical setting. This was partially attributed to the general absence of

Occupational Therapy research literature (many respondents noted the relative newness of Occupational Therapy as a profession and the associated lack of subject specific bibliographic databases). As such, the students experienced difficulties locating occupation-focussed research evidence for client groups. This contributes towards explaining the students' general preference for human information resources during clinical practice (anecdotal evidence was instantly applicable to local patient cases). Inconsistent service availability across placement libraries was a further problem, as was lack of awareness of library subscription resources. These findings emphasise the importance of purchasing Occupational Therapy specific resources (where available), of maximising students' IL skills through the provision of regular training sessions, and of publicising relevant library services and resources.

### 5.3 Recommendations for practice

**Table 18: Recommendations for practice**

<b>Staff skills</b>	1. Ensure that library staff are aware of Occupational Therapy as a distinct profession and OTs' typical role requirements
<b>Library space</b>	2. Provide clear signage for Occupational Therapy print collections 3. Extend the opening hours of placement libraries where possible
<b>User training</b>	4. Offer frequent and regular training sessions on information literacy, citing references, structuring essays and presentation skills
<b>Collections</b>	5. Purchase resources covering academic and clinical writing skills, presentation skills, career development, workplace skills, and medical and nursing terminology 6. Ensure current subscriptions to the following e-journals and bibliographic databases; The British, American and Canadian Journals of Occupational Therapy, CINAHL, MEDLINE and PsycINFO 7. Regularly update print collections with new books on Occupational Therapy specialties 8. Liaise with university faculty members for up-to-date reading lists and student numbers to ensure sufficient numbers of core textbooks 9. Provide user-friendly authentication systems for e-resources, downloadable content where possible, mobile compatible apps, and library catalogues with simple search interfaces
<b>Publicity</b>	10. Publicise the benefits of point-of-care tools for OT students on placements 11. Publicise freely available bibliographic databases of relevance to OT students (OTSeeker, Cochrane Library, PubMed) 12. Publicise librarians' IL expertise and knowledge of Occupational Therapy practice through personal contact with students at the beginning of degree programmes 13. Publicise purchased printed resources and e-resources relevant to OT students

## **5.4 Discussion conclusion**

This study explored the information needs of Masters level OT students at a COT accredited university. Its stated objectives (1.3.3) were met as follows:

**Objective 1:** To ascertain OT students' motivators for information-seeking (academic assignments, EBP, workplace skills)

**Objective 2:** To determine which information sources are used and why (clinical colleagues, textbooks, internet search engines, e-journals, bibliographic databases)

**Objective 3:** To establish the barriers inhibiting the satisfaction of information needs (IL skills gaps, library staff's limited awareness of OTs' role requirements, lack of awareness of subscription resources, perceived inaccessibility and unavailability of library resources and services)

The recommendations for practice (5.3) illuminated the associated factors contributing to library use and non-use. These factors were staff skills (library staff's awareness of OT students' role requirements and associated information needs), library space (signage and opening hours), opportunities for frequent and regular user training (information literacy, academic writing, presentation skills), collections management (availability and accessibility of Occupational Therapy specific electronic and printed resources), and targeted publicity of relevant library services and resources (purchased, freely available, librarians' expertise and knowledge of Occupational Therapy practice).

## **6. Conclusion**

### **6.1 Purpose and justification**

This case study explored the information needs of Masters level OT students at a COT accredited university in England (Institution A) and identified the associated factors contributing to library use and non-use. The investigation was timely because few studies discuss the information needs of OT students specifically, even though 31 British universities offer Occupational Therapy programmes and government support for student OTs has increased in recent years. The COT's recently updated standards specify outcomes for Occupational Therapy programmes, including that higher education institutions "support the development of professionals committed to practising in an evidence-informed manner". It is hoped that this study's findings will facilitate greater understanding of OT students' information needs, enabling libraries to better support the missions of their parent institutions in relation to the COT's standards.

### **6.2 Scope**

The investigation's scope was informed by the COT's definition of Occupational Therapy, alongside Nicholas and Herman (2009, pp. 112-116), Case (2007, p. 246) and Dorner et al.'s (2015, pp. 24-45) conceptualisation of information needs as a contextual variable within different occupational environments. Occupation was defined as profession (student), specialisation (OT), career stage (Masters level), pattern of learning (full-time and distance learning due to clinical placements), organisational culture (shared assumptions, values and beliefs) and tasks (the specific demands placed on students during their course of study). As such, the methodology was drawn from theorists operating within the user-centred research tradition who regard information needs as dynamic, subjective and contextual.

### **6.3 Thematic literature review**

A thematic review of the literature relating to the information needs of healthcare students, OTs and OT students (2004-2015) was undertaken. A substantial literature gap regarding the information needs of OT students was discerned. Three overarching themes were identified in relation to the study's aim (1.3.2) and objectives (1.3.3); motivators for information-seeking, preferred information resources and barriers inhibiting the satisfaction of information needs.

## 6.4 Methodology

An interpretivist, constructionist and inductive approach to information needs assessment was undertaken. One institutional case (Institution A) was chosen through non-probability purposive snowball sampling (one whole cohort, 27 students). The unit of analysis was individual Masters level OT students. A mixed methods self-completion questionnaire was administered via email attachment by one of Institution A's faculty members; the response rate was 23%. Inductive thematic analysis and non-parametric descriptive data analysis confirmed the presence of the three overarching themes identified in the literature review, alongside a number of other interrelated themes and subthemes.

## 6.5 Key findings

The key findings are summarised in relation to the investigation's three objectives:

**Objective 1:** To ascertain OT students' motivators for information-seeking (academic assignments, EBP, workplace skills)

**Objective 2:** To determine which information sources are used and why (clinical colleagues, textbooks, internet search engines, e-journals, bibliographic databases)

**Objective 3:** To establish the barriers inhibiting the satisfaction of information needs (IL skills gaps, library staff's limited awareness of OTs' role requirements, lack of awareness of subscription resources, perceived inaccessibility and unavailability of library resources and services)

Thirteen recommendations for future practice were formulated. The recommendations are directly related to the associated factors contributing to OT students' library use and non-use; staff skills and awareness (ensuring library staff are aware of Occupational Therapy as a distinct profession and OT students' typical role requirements), library space (providing clear signage for Occupational Therapy print collections, extending library opening hours where possible), offering opportunities for frequent and regular user training (information literacy, academic writing, presentation skills), comprehensive collections management (improving the availability and accessibility of Occupational Therapy specific electronic and printed resources), and targeted publicity of relevant library services and resources (purchased, freely available, librarians' expertise and knowledge of Occupational Therapy practice).



## **6.6 Recommendations for future research**

Future research should involve a longitudinal collective case study in which further data is collected from other COT accredited English universities for comparative purposes. This would establish whether the study's findings are generalisable to other cases, whether the practice recommendations apply to Undergraduate OT students as well as Masters level OT students, and whether OT students' information needs vary depending on the stage of their course. Follow-up interviews should be scheduled with collective case study participants to facilitate further in-depth questioning and data corroboration. The scope of the study could also be extended to include the communication preferences of OT students to enable optimal publicity of library resources and services.

**Word count: 16076**

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## Appendices

### Appendix A: Key search terms and Boolean operators

Population	Issue	Context/ Comparison	Outcome
	AND	AND	AND
“occupational therapy student*” <b>OR</b> “occupational therapy masters” <b>OR</b> “occupational therapy postgraduate*” <b>OR</b> “occupational therapy undergraduate*” <b>OR</b> “occupational therapy education”	“information need*” <b>OR</b> “information behavio*r*” <b>OR</b> “information seeking” <b>OR</b> “information seeking behavio*r*” <b>OR</b> “information literac*” <b>OR</b> “information skill*” <b>OR</b> “information retrieval” <b>OR</b> “learning style*” <b>OR</b> communication <b>OR</b> “evidence based practice” <b>OR</b> “evidence-based practice” <b>OR</b> EBP <b>OR</b> perception* <b>OR</b> experience* <b>OR</b> coping <b>OR</b> confidence <b>OR</b> emotion*	librar* <b>OR</b> “academic librar*” <b>OR</b> “library service*” <b>OR</b> “information service*” <b>OR</b> “information cent*” <b>OR</b> “occupational therap*” <b>OR</b> “healthcare student*” <b>OR</b> “health care student*” <b>OR</b> “healthcare masters” <b>OR</b> “health care masters” <b>OR</b> “healthcare postgraduate*” <b>OR</b> “health care postgraduate*” <b>OR</b> “healthcare undergraduate*” <b>OR</b> “health care undergraduate*” <b>OR</b> “medical student*” <b>OR</b> “nursing student*” <b>OR</b> “allied health student*”	“service use” <b>OR</b> “service non-use” <b>OR</b> “service under use” <b>OR</b> “service improvement” <b>OR</b> “service provision” <b>OR</b> “service evaluation” <b>OR</b> impact <b>OR</b> quality <b>OR</b> “decision-making” <b>OR</b> “decision making” <b>OR</b> “strategic plan*”



## Appendix B: Bibliographic databases

Bibliographic database	Coverage (in relation to research question)	Means of access
<b>CINAHL</b> Cumulative Index to Nursing and Allied Health Literature	<b>Subject:</b> Nursing and allied health, including occupational therapy. Also indexes librarianship articles with nursing or allied health related content.  <b>Date range:</b> 1994-present	Institutional subscription
<b>EMBASE</b> Excerpta Medica Database	<b>Subject:</b> General medicine and nursing  <b>Date range:</b> 1947-present	Institutional subscription
<b>MEDLINE</b> Medical Literature Analysis and Retrieval System Online	<b>Subject:</b> General medicine, including allied health specialties  <b>Date range:</b> 1946-present	Institutional subscription
<b>ERIC</b> Educational Resources Information Center	<b>Subject:</b> Education research  <b>Date range:</b> 1964-present	Freely accessible
<b>LISA</b> Library and Information Science Abstracts	<b>Subject:</b> Librarianship and information science  <b>Date range:</b> 1969-present	Institutional subscription

## Appendix C: Search strategies

### CINAHL (conducted on 21<sup>st</sup> May 2015)

1. CINAHL; STUDENTS, OCCUPATIONAL THERAPY/; 0 results.
2. CINAHL; "occupational therapy student\*".ti,ab; 524 results.
3. CINAHL; "occupational therapy masters".ti,ab; 4 results.
4. CINAHL; "occupational therapy postgraduate\*".ti,ab; 1 results.
5. CINAHL; "occupational therapy undergraduate\*".ti,ab; 11 results.
6. CINAHL; EDUCATION, OCCUPATIONAL THERAPY/; 0 results.
7. CINAHL; "occupational therapy education".ti,ab; 221 results.
8. CINAHL; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7; 721 results.
9. CINAHL; INFORMATION NEEDS/; 8527 results.
10. CINAHL; "information need\*".ti,ab; 1918 results.
11. CINAHL; "information behavior\*r\*".ti,ab; 142 results.
12. CINAHL; "information seeking".ti,ab; 918 results.
13. CINAHL; INFORMATION SEEKING BEHAVIOR/; 2165 results.
14. CINAHL; "information seeking behavior\*r\*".ti,ab; 304 results.
15. CINAHL; INFORMATION LITERACY/; 1913 results.
16. CINAHL; "information literac\*".ti,ab; 492 results.
17. CINAHL; "information skill\*".ti,ab; 100 results.
18. CINAHL; INFORMATION RETRIEVAL/; 6162 results.
19. CINAHL; "information retrieval".ti,ab; 549 results.
20. CINAHL; LEARNING STYLES/; 1012 results.
21. CINAHL; "learning style\*".ti,ab; 769 results.
22. CINAHL; COMMUNICATION/; 35302 results.
23. CINAHL; communication.ti,ab; 40058 results.
24. CINAHL; OCCUPATIONAL THERAPY PRACTICE, EVIDENCE-BASED/; 0 results.
25. CINAHL; "evidence based practice".ti,ab; 6737 results.
26. CINAHL; "evidence-based practice".ti,ab; 6737 results.
27. CINAHL; EBP.ti,ab; 1090 results.
28. CINAHL; PERCEPTION/; 11990 results.
29. CINAHL; perception\*.ti,ab; 50847 results.
30. CINAHL; STUDENT EXPERIENCES/; 2590 results.
31. CINAHL; experience\*.ti,ab; 159807 results.
32. CINAHL; COPING/; 18423 results.
33. CINAHL; coping.ti,ab; 17650 results.
34. CINAHL; CONFIDENCE/; 3803 results.
35. CINAHL; confidence.ti,ab; 52204 results.
36. CINAHL; EMOTIONS/; 9498 results.
37. CINAHL; emotion\*.ti,ab; 34628 results.
38. CINAHL; LIBRARIES/ OR LIBRARIES, ACADEMIC/ OR LIBRARIES, HOSPITAL/ OR LIBRARIES, HEALTH SCIENCES/; 7838 results.
39. CINAHL; librar\*.ti,ab; 20653 results.
40. CINAHL; "academic librar\*".ti,ab; 554 results.
41. CINAHL; "library service\*".ti,ab; 557 results.
42. CINAHL; "information service\*".ti,ab; 1004 results.
43. CINAHL; "information cent\*".ti,ab; 521 results.

44. CINAHL; 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43; 379167 results.

45. CINAHL; 8 AND 44; 341 results.

46. CINAHL; 45 [Limit to: Publication Year 2004-2015 and Abstract Available and (Language English)]; 180 results.

47. CINAHL; OCCUPATIONAL THERAPY/; 13356 results.

48. CINAHL; OCCUPATIONAL THERAPISTS/; 4894 results.

49. CINAHL; "occupational therap\*".ti; 7955 results.

50. CINAHL; "healthcare student\*".ti; 47 results.

51. CINAHL; "health care student\*".ti; 58 results.

52. CINAHL; "healthcare masters".ti; 0 results.

53. CINAHL; "health care masters".ti; 0 results.

54. CINAHL; "healthcare postgraduate\*".ti; 0 results.

55. CINAHL; "health care postgraduate\*".ti; 0 results.

56. CINAHL; "healthcare undergraduate\*".ti; 1 results

57. CINAHL; "health care undergraduate\*".ti; 0 results.

58. CINAHL; STUDENTS,MEDICAL/; 0 results.

59. CINAHL; "medical student\*".ti; 2492 results.

60. CINAHL; STUDENTS,NURSING/; 0 results.

61. CINAHL; "nursing student\*".ti; 6301 results.

62. CINAHL; STUDENTS,ALLIED HEALTH/; 0 results.

63. CINAHL; "allied health student\*".ti; 64 results.

64. CINAHL; 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 58 OR 59 OR 60 OR 61 OR 62 OR 63; 28658 results.

65. CINAHL; 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43; 43540 results.

66. CINAHL; 64 AND 65; 313 results.

67. CINAHL; 66 [Limit to: Publication Year 2004-2015 and Abstract Available and (Language English)]; 123 results.

**EMBASE (conducted on 21<sup>st</sup> May 2015)**

1. EMBASE; OCCUPATIONAL THERAPY STUDENT/; 114 results.
2. EMBASE; "occupational therapy student\*".ti,ab; 435 results.
3. EMBASE; "occupational therapy masters".ti,ab; 6 results.
4. EMBASE; "occupational therapy postgraduate\*".ti,ab; 0 results.
5. EMBASE; "occupational therapy undergraduate\*".ti,ab; 10 results.
6. EMBASE; OCCUPATIONAL THERAPY EDUCATION/; 134 results.
7. EMBASE; "occupational therapy education".ti,ab; 145 results.
8. EMBASE; 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7; 692 results.
9. EMBASE; "information need\*".ti,ab; 6116 results.
10. EMBASE; "information behavio\*r\*".ti,ab; 96 results.
11. EMBASE; INFORMATION SEEKING/; 1314 results.
12. EMBASE; "information seeking".ti,ab; 1673 results.
13. EMBASE; "information seeking behavio\*r\*".ti,ab; 370 results.
14. EMBASE; INFORMATION LITERACY/; 233 results.
15. EMBASE; "information literac\*".ti,ab; 236 results.
16. EMBASE; "information skill\*".ti,ab; 137 results.
17. EMBASE; INFORMATION RETRIEVAL/; 25746 results.
18. EMBASE; "information retrieval".ti,ab; 1759 results.
19. EMBASE; LEARNING STYLE/; 1428 results.
20. EMBASE; "learning style\*".ti,ab; 1271 results.
21. EMBASE; INTERPERSONAL COMMUNICATION/; 124774 results.
22. EMBASE; communication.ti,ab; 174953 results.
23. EMBASE; EVIDENCE BASED PRACTICE/; 35998 results.
24. EMBASE; "evidence based practice".ti,ab; 7338 results.
25. EMBASE; "evidence-based practice".ti,ab; 7338 results.
26. EMBASE; EBP.ti,ab; 6323 results.
27. EMBASE; PERCEPTION/; 67728 results.
28. EMBASE; perception\*.ti,ab; 190480 results.
29. EMBASE; EXPERIENCE/; 31274 results.
30. EMBASE; experience\*.ti,ab; 957677 results.
31. EMBASE; COPING BEHAVIOR/; 37685 results.
32. EMBASE; coping.ti,ab; 46560 results.
33. EMBASE; confidence.ti,ab; 336901 results.
34. EMBASE; EMOTION/; 75168 results.
35. EMBASE; emotion\*.ti,ab; 160494 results.
36. EMBASE; LIBRARIES, HOSPITAL/ OR LIBRARIES, MEDICAL/ OR LIBRARY/; 18304 results.
37. EMBASE; librar\*.ti,ab; 127237 results.
38. EMBASE; "academic librar\*".ti,ab; 67 results.
39. EMBASE; "library service\*".ti,ab; 422 results.
40. EMBASE; "information service\*".ti,ab; 3188 results.
41. EMBASE; "information cent\*".ti,ab; 2308 results.
42. EMBASE; 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29 OR 30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41; 2010861 results.
43. EMBASE; 8 AND 42; 343 results.

44. EMBASE; 43 [Limit to: (Languages English) and Publication Year 2004-2015]; 188 results.
45. EMBASE; OCCUPATIONAL THERAPIST/ OR OCCUPATIONAL THERAPY/; 20396 results.
46. EMBASE; "occupational therap\*".ti; 5349 results.
47. EMBASE; "healthcare student\*".ti; 90 results.
48. EMBASE; "health care student\*".ti; 91 results.
49. EMBASE; "healthcare masters".ti; 0 results.
50. EMBASE; "health care masters".ti; 1 results.
51. EMBASE; "healthcare postgraduate\*".ti; 2 results.
52. EMBASE; "health care postgraduate\*".ti; 1 results.
53. EMBASE; "health care undergraduate\*".ti; 0 results.
54. EMBASE; MEDICAL STUDENT/; 45519 results.
55. EMBASE; "medical student\*".ti; 15110 results.
56. EMBASE; NURSING STUDENT/; 17958 results.
57. EMBASE; "nursing student\*".ti; 4809 results.
58. EMBASE; ALLIED HEALTH STUDENT/; 62 results.
59. EMBASE; "allied health student\*".ti; 71 results.
60. EMBASE; 45 OR 46 OR 47 OR 48 OR 49 OR 50 OR 51 OR 52 OR 53 OR 54 OR 55 OR 56 OR 57 OR 58 OR 59;  
87368 results.
61. EMBASE; 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18 OR 36 OR 37 OR 38 OR 39 OR 40  
OR 41; 168657 results.
62. EMBASE; 60 AND 61; 833 results.
63. EMBASE; 62 [Limit to: (Languages English) and Publication Year 2004-2015]; 553 results.

## ERIC (conducted on 22<sup>nd</sup> May 2015)

<input type="checkbox"/> Select / deselect all <input type="button" value="Search with AND"/> <input type="button" value="Search with OR"/> <input type="button" value="Delete Searches"/> <input type="button" value="Refresh Search Results"/>			
Search ID#	Search Terms	Search Options	Actions
<input type="checkbox"/> S5	TI ( "healthcare student" OR "health care student" OR "healthcare masters" OR "health care masters" OR "healthcare postgraduate" OR "health care postgraduate" OR "healthcare undergraduate" OR "health care undergraduate" OR "medical student" OR "nursing student" OR "allied health student" ) AND TI ( learn* or communicat* OR informat* )	Limiters - Date Published: 20040101-20150631; Language: English Search modes - Boolean/Phrase	<a href="#">View Results (94)</a> <a href="#">View Details</a> <a href="#">Edit</a>
<input type="checkbox"/> S4	AB ( "healthcare student" OR "health care student" OR "healthcare masters" OR "health care masters" OR "healthcare postgraduate" OR "health care postgraduate" OR "healthcare undergraduate" OR "health care undergraduate" OR "medical student" OR "nursing student" OR "allied health student" ) AND AB ( learn* or communicat* OR informat* )	Search modes - Boolean/Phrase	<a href="#">View Results (1,444)</a> <a href="#">View Details</a> <a href="#">Edit</a>
<input type="checkbox"/> S3	TX ( "healthcare student" OR "health care student" OR "healthcare masters" OR "health care masters" OR "healthcare postgraduate" OR "health care postgraduate" OR "healthcare undergraduate" OR "health care undergraduate" OR "medical student" OR "nursing student" OR "allied health student" ) AND TX ( learn* or communicat* OR informat* )	Search modes - Boolean/Phrase	<a href="#">View Results (2,640)</a> <a href="#">View Details</a> <a href="#">Edit</a>
<input type="checkbox"/> S2	TX "occupational therap*" AND TX ( learn* or communicat* OR informat* )	Limiters - Date Published: 20040101-20150631; Language: English Search modes - Boolean/Phrase	<a href="#">View Results (238)</a> <a href="#">View Details</a> <a href="#">Edit</a>
<input type="checkbox"/> S1	TX ( "occupational therapy student" OR "occupational therapy masters" OR "occupational therapy postgraduate" OR "occupational therapy undergraduate" OR "occupational therapy education" ) AND TX ( "information need" OR "information behavior" OR "information seeking" OR "information seeking behavior" OR "information literac*" OR "information skill" OR "information retrieval" OR "learning style" OR "communication" OR "evidence based practice" OR "evidence-based practice" OR EBP OR "perception" OR "experience" OR "coping" OR "confidence" OR "emotion" ) AND TX ( librar* OR "academic librar*" OR "library service" OR "information service" OR "information cent*" ) <a href="#">Show Less</a>	Search modes - Boolean/Phrase	<a href="#">View Results (1)</a> <a href="#">View Details</a> <a href="#">Edit</a>

## LISA (conducted on 22<sup>nd</sup> May 2015)

(su(occupational therapy students) OR ("occupational therapy student\*" OR "occupational therapy masters\*") OR ("occupational therapy postgraduate\*" OR "occupational therapy undergraduate\*") OR "occupational therapy education" OR su(occupational therapy education)) AND la.exact("English") AND pd(20040101-20150522)

("healthcare student\*" OR ("health care student\*" OR "health care masters") OR ("healthcare masters" OR "healthcare postgraduate\*") OR ("health care postgraduate\*" OR "healthcare undergraduate\*") OR su(("health care undergraduate\*" OR "medical student\*")) OR ("nursing student\*" OR "allied health student\*")) AND la.exact("English") AND pd(20040101-20150522)

## MEDLINE (conducted on 22<sup>nd</sup> May 2015)

- 1 (occupational therapy student\* or occupational therapy masters or occupational therapy postgraduate\* or occupational therapy undergraduate\* or occupational therapy education).ti,ab. (442)
- 2 Information Seeking Behavior/ (869)
- 3 (information need\* or information behavio\*r or information seeking or information seeking behavio\*r\*).ti,ab. (6312)
- 4 Information Literacy/ (109)
- 5 information literac\*.ti,ab. (240)
- 6 information skill\*.ti,ab. (116)
- 7 "Information Storage and Retrieval"/ (16877)
- 8 information retrieval.ti,ab. (1641)
- 9 learning style\*.ti,ab. (1028)
- 10 Communication/ (64668)
- 11 communication.ti,ab. (146120)
- 12 Evidence-Based Practice/ (5055)
- 13 (evidence based practice or evidence-based practice or EBP).ti,ab. (10932)
- 14 Perception/ (22184)
- 15 experience.ti,ab. (464719)
- 16 coping.ti,ab. (36098)
- 17 confidence.ti,ab. (296194)
- 18 Emotions/ (45514)
- 19 emotion\*.ti,ab. (124584)
- 20 Libraries/ (1563)
- 21 librar\*.ti,ab. (115440)
- 22 academic librar\*.ti,ab. (70)
- 23 Library Services/ (995)
- 24 library service\*.ti,ab. (448)
- 25 Information Services/ (15064)
- 26 information service\*.ti,ab. (2560)
- 27 information cent\*.ti,ab. (1771)
- 28 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 (1236445)
- 29 1 and 28 (173)
- 30 29 (173)
- 31 limit 29 to (english language and yr="2004 - 2015") (98)
- 32 Occupational Therapy/ (10535)
- 33 occupational therap\*.ti. (4191)
- 34 Students, Health Occupations/ (1827)
- 35 (healthcare student\* or health care student\* or healthcare masters or health care masters or healthcare postgraduate\* or health care postgraduate\* or healthcare undergraduate\* or health care undergraduate\*).ti. (158)
- 36 Students, Medical/ (22887)
- 37 medical student\*.ti. (13445)
- 38 Students, Nursing/ (17604)
- 39 nursing student\*.ti. (5005)
- 40 allied health student\*.ti. (66)
- 41 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 (59101)
- 42 2 or 3 or 4 or 5 or 6 or 7 or 8 (24759)
- 43 41 and 42 (250)
- 44 43 (250)
- 45 limit 44 to (english language and yr="2004 - 2015") (176)

## Appendix D: Hierarchy of evidence

<b>Creswell's priority system for searching literature (by extent of external review)</b>	
1. Peer-reviewed journal articles	5. Conference papers
2. Articles published in professional journals	6. Dissertations and theses
3. Books referenced in peer-reviewed or professional journals	7. Opinion pieces in journals and on websites
4. Books including references to seminal works	

## Appendix E: Example CASP checklist

### **CASP qualitative research checklist: Screening questions**

1. Was there a clear statement of the aims of the research?
2. Is a qualitative methodology appropriate?
3. Was the research design appropriate to address the aims of the research?
4. Was the recruitment strategy appropriate to the aims of the research?
5. Was the data collected in a way that addressed the research issue?
6. Has the relationship between researcher and participants been adequately considered?
7. Have ethical issues been taken into consideration?
8. Was the data analysis sufficiently rigorous?
9. Is there a clear statement of findings?
10. How valuable is the research?



## Appendix F: Systems-oriented conceptual frameworks

	<b>Channel Selection and Filtering</b> (Allen & Gerstberger, 1967, pp. 1-23)	<b>Information Needs and Uses</b> (Paisley, 1968, pp. 1-3)	<b>Information Needs and Uses</b> (Brittain, 1970, pp. 24-32; Line, 1969, pp. 7-9; Line et al., 1971, pp. 201-202)	<b>Anomalous States of Knowledge</b> (Belkin, 1980, pp. 135-137)	<b>Information Behaviour</b> (Wilson, 1981, pp. 3-11)
Purpose of study/ model	Improvement of a local IR system to ensure timely provision of work-related information	Analysis of information needs literature followed by a new framework centred on American scientists and technologists	Collating knowledge of local requirements to design a user-oriented IR system	Improvement of IR system performance. An ASK was a gap, lack, uncertainty or incoherence in relation to a desired goal. Represents the tipping point between systems-oriented and user-centred models	Explored users' perceptions of their own needs and noted the importance of information exchange through informal channels
Research philosophy/ reasoning approach	Positivist Deductive	Positivist Deductive	Positivist Deductive	Interpretivist/ constructionist (emphasised the subjectivity of language and its impact on expressions of need). Deductive (development of ASK schemes)	Interpretivist/ constructionist (incongruity between information scientists' interpretations and participants' conceptualisation of needs). Inductive
Research design	Quantitative	Mixed methods	Mixed methods	Qualitative	Qualitative
Research strategy	Case study of an engineering department	Implied recommendation of case studies due to the focus on specific work environments	Critical incident study on social scientists	Iterative	Unspecified

Data collection and analysis	Questionnaire	Self-report diary, questionnaire, structured interview	Questionnaire, semi-structured interview, participant observation	Unstructured interview	Semi-structured interview, observation, conversational analysis
Information needs conceptualisation	Needs are fixed task-related requests	Needs are not just task-related requests; a system's capacity to satisfy needs should be measured by whether the retrieved information meets users' perceptions of relevance and utility	Needs may remain unrecognised or unexpressed; unarticulated needs should be incorporated into needs models	"the problem of the effective and efficient transfer of desired information between human generator and human user"	Patterns of need can be discerned through the delineation of users by; occupational group, type of organisation, work tasks, socio-cultural environment, physical environment and politico-economic environment
Information-seeking motivators identified	Solving work-task related problems	Occupational tasks and role requirements	Function (research, teaching, management, administration, study) and environment (academic, research organisation, industry, government)		Drew from Maslow's (1943) theory of human motivation. Discussed the interrelation between physiological needs, affective needs and cognitive needs
Barriers inhibiting the satisfaction of information needs	The efficacy of the local IR system measured through economic, psychological and physical costs	The efficacy of IR systems	The efficacy of IR systems, in relation to lack of time, motivation and awareness	"incongruity between the request as stated and the need underlying the request"	The efficacy of IR systems, also informal information systems, personal factors, role demands and the environmental context
Preferred information resources	Perceived accessibility was the determinant for frequency of use; quality and quantity were less important due to employees' job tasks	Perceptions of relevance and utility related to the occupational environment (organisational culture, values) and personality traits (motivation, intelligence, creativity)			

## Appendix G: User-centred models

	<b>Sense-making Process</b> (Dervin, 1977, pp. 16-32; Dervin & Nilan, 1986, pp. 12-16)	<b>Information Search Process (ISP)</b> (Kuhlthau, 1991, pp. 364-370)	<b>Information needs evaluative framework</b> (Nicholas & Herman, 2009, pp. 4-145)
Purpose of study/ model	The sense-making process; an individual encounters a problematic situation (decision-making, understanding causation, predicting outcomes, reaching personal or professional goals, or identifying the characteristics of an object or an event); resolution of the situation is inhibited by lack of knowledge; the knowledge gap is recognised and a question set is formulated; formal or informal information systems are consulted to bridge the gap and make sense of the situation	Five case studies of American library users with imposed information needs. Investigated common cognitive and affective experiences during the information-seeking process	To ensure that information professionals reconnect with their user base so that informed decisions about strategic priorities can be made
Research philosophy/ reasoning approach	Interpretivist, constructionist, inductive	Interpretivist, constructionist, inductive	Interpretivist, constructionist, inductive
Research design	Qualitative	Mixed methods	Mixed methods
Research strategy	Unspecified	Longitudinal case studies	Case study
Data collection & analysis	Unspecified	Journals and search logs. Data was evaluated interpretively through content analysis. A Likert scale questionnaire and semi-structured interviews provided quantitative support for the study's conclusions	Semi-structured interviews conducted within participants' own environments
Information needs conceptualisation	Information is constructed. Needs are defined as a cognitive gap within the context of the sense-making process. Sense-making is considered subjective, but it was suggested that patterns of need and information-seeking can be uncovered through the framework's	The model has six stages: an information need is recognised (the need may be imposed or personally initiated); a topic or approach is selected according to personal interest, task requirements, allocated time and perceptions of the information available; general information on the subject is explored;	The works of Maslow (1943), Wilson (1981) and Norwood (1999) form the framework's basis (coping information is equated with physiological needs, safety with helping information, belongingness with enlightening information (assisting relationship development), esteem with empowering information (aiding confidence, achievement, recognition or approval) and self-actualisation with edifying

	application within specific research contexts because situational variables impact information needs	the need becomes focussed as a personal perspective on the topic is developed; the need is expressed as a subjective construct and a comprehensive search takes place; a summary search is conducted and the information encountered becomes increasingly irrelevant	information)  Also located within Dervin and Nilan's "user-orientated holistic approach" (the influence of context on the sense-making process is discussed)  Drew upon Line's (1969) concept of unarticulated needs, suggesting that needs may be unrecognised or recognised but unexpressed
Information-seeking motivators identified	Generating ideas, enhancing understanding, finding direction or motivation, gaining skills, connecting with others, support or reassurance, rest or relaxation, happiness or pleasure, reaching a goal, reducing uncertainty, predicting outcomes, locating instructions, clarifying or confirming	Personal interest, task requirements, job-related problem solving, personal understanding, forming a point of view, becoming informed	<b>Function (the use to which information is put)</b> Users' roles, tasks or interest dictated goals influence function: Fact-finding, current awareness, research, background information, inspiration, recreation
Barriers inhibiting the satisfaction of information needs	Inefficient and ineffective reference interviews. Information retrieval and service delivery in relation to the individualised nature of information needs	Allocated time, perceptions of availability, information-seeking confidence	Obsolete information, time limitations, information overload, perceived availability, finances, job dissatisfaction, skills gaps, knowledge base, cognitive ability, personal perspective of topic, research stage, language proficiency, learning style
Preferred information resources		Perceived relevance of information resources impacted by feelings of discomfort, anxiety or confidence during the search process. Also by prior experience, knowledge and the user's perspective of the topic	<b>Subject:</b> Related to job responsibilities and familiarity with the field. Affects the specificity and depth of the need <b>Nature:</b> Varies by discipline and research stage; theoretical, empirical, descriptive, factual, statistical or methodological <b>Intellectual level:</b> Intelligibility and the knowledge and cognitive capacity needed to understand it <b>Viewpoint:</b> The approach from which material is written <b>Quantity:</b> Influenced by motivation and time constraints <b>Quality/authority, date/currency, speed of delivery, place of publication, processing and packaging:</b> Raw or processed data. The physical form of the information

## Appendix H: Programmes in England currently accredited by the College of Occupational Therapists as of 31<sup>st</sup> May 2015

(College of Occupational Therapists, 2015b, p. 14)

England		3 year full-time BSc (Hons)	4/5 year part-time/ in service BSc (Hons)	Accelerated eg BSc/MSc (refer to entry)
Bournemouth	Bournemouth University	✓		MSc
Bradford	University of Bradford	✓		
Bristol	University of the West of England	✓		
Canterbury (and Chatham)	Canterbury Christ Church University*	✓		
Colchester	University of Essex		✓	MSc
Coventry (and Staffordshire)	Coventry University*	✓	✓	
Derby	University of Derby	✓		MSc
Eastbourne	University of Brighton		✓	PG Dip
Huddersfield	University of Huddersfield	✓		
Lancaster (and Carlisle)	University of Cumbria*	✓	✓	MSc
Leeds	Leeds Beckett University			MSc
Liverpool	The University of Liverpool	✓		
London/Uxbridge	Brunel University London	✓		MSc
London/Southwark	London South Bank University	✓	✓	PG Dip, MSc
Middlesbrough	Teesside University	✓		PG Dip, MSc
Newcastle	Northumbria University	✓		MSc
Northampton	The University of Northampton	✓	✓	
Norwich	University of East Anglia	✓		MSc
Oxford	Oxford Brookes University	✓	✓	MSc
Plymouth	Plymouth University	✓		MSc
Salford	University of Salford	✓	✓	
Sheffield (and Grantham)	Sheffield Hallam University*	✓		MSc, BSc (Hons)
Southampton	University of Southampton	✓	✓	MSc
Worcester	University of Worcester	✓		
York	York St John University	✓	✓	

## **Appendix I: Invitation to assist with dissertation research**

[Researcher's name]  
Department of Information Studies,  
Llanbadarn Fawr,  
Aberystwyth, Ceredigion,  
SY23 3AL Wales  
Email: \*\*\*\*@aber.ac.uk  
31<sup>st</sup> May 2016

### **The information needs of Occupational Therapy students: A case study Invitation to assist with dissertation research**

Dear [faculty member's name],

My name is [researcher's name] and I am a student at Aberystwyth University studying for a Masters in Information and Library Studies by distance learning. As part of my course, I am undertaking a dissertation under the supervision of Senior Lecturer Hugh Preston ([hjp@aber.ac.uk](mailto:hjp@aber.ac.uk)). The dissertation is investigating how libraries can support Occupational Therapy students' learning and evidence-based research skills in preparation for clinical practice, through better understanding their information needs.

I am writing to ask if you would be willing to help me in this research by asking your Occupational Therapy students to complete the attached questionnaire? If so, [name of the study's key informant] has offered to administer the questionnaire in person at a convenient time and place for you and your students. Completion of the questionnaire would take about 15 minutes of the students' time.

I would be very grateful for your help, but before you decide whether or not to assist, it is important that you understand:

- a) Why the research is being done
- b) What it will involve

Please take time to read the following information carefully. If any of the information below is unclear or if you would like more information about this research project and what it involves, then please contact me (my contact details are listed at the beginning of this email).

All the information about your participation in this study, and your students' participation in this study, will be kept confidential (details about how this will be done are included in Part 2 of this email).

This investigation was subject to an ethics check by the researcher's dissertation supervisor; it was approved, so referral to Aberystwyth University's Ethics Committee was not deemed necessary. Five sets of guidelines will be followed throughout; the Department of Information Studies' (Aberystwyth University) Ethics Policy for Research, the Data Protection Act 1998, Aberystwyth University Records Management/Information Governance Policy, the British Sociological Association's Statement of Ethical Practice, and the Chartered Institute of Information Professionals' Code of Professional Practice.

**Part 1: Why am I doing this research: what is its purpose?**

The title of the dissertation is "The information needs of Occupational Therapy students: A case study". I am doing this research because little has been written about:

1. The reasons why Occupational Therapy students search for information
2. Which information sources are used by Occupational Therapy students and why
3. The barriers experienced by Occupational Therapy students when locating and accessing information

This dissertation aims to answer these questions in an effort to better understand how these information needs contribute to library use and non-use. This study therefore focuses on how libraries can support Occupational Therapy students' learning and evidence-based research skills in preparation for clinical practice.

**Part 2: What does the study involve/what is the conduct of the study?**

As an Occupational Therapy faculty member at [Institution A], you have been approached to help facilitate a case study. [Institution A] was chosen because this study's key informant is an [Institution A] graduate who suggested that [Institution A] would be an extremely suitable case. A localised study will provide the opportunity for in-depth data collection, through which the information needs of the Occupational Therapy students can be explored.

The criteria for case selection are:

Location: **England**

Profession: **student**

Specialisation: **Occupational Therapy**

Career stage: **Masters level**

Pattern of learning: **full-time, distance learning (when on clinical placements)**

University: **College of Occupational Therapists accredited course, MSc**

Library users or non-users: **both**

Before you agree to help, please note the following about this study:

1. **Duration:** Completing the questionnaire should take about 15 minutes of your students' time.
2. **Confidentiality:** All the information provided will be treated confidentially. No individuals, libraries, Occupational Therapy departments or universities will be identified in the results or within the final dissertation. Any direct quotations included in the dissertation will be used selectively and anonymously (that is, no one will be able to attribute/link the words to individual students).
3. **Anonymity:** The chosen research instrument (a supervised self-completion questionnaire) means that individual and institutional anonymity is not possible until the data analysis stage of the research project (at which point the data will be anonymised). However, confidentiality and privacy are assured throughout the research process.
4. **Data security:** The anonymised data will be stored in a password protected Excel file on a password protected laptop; the printed questionnaires will be shredded as soon as the data has been transferred to the Excel file. The data file will be destroyed six months after graduation.
5. The full dissertation will be available electronically via email (\*\*\*\*@aber.ac.uk) on request.
6. **Consent:** Each printed copy of the questionnaire will include an invitation for completion. Informed consent will be assumed on receipt of the completed questionnaire. Your students will be free to withdraw from the study up until the questionnaire has been submitted.



If you agree to assist with this study, I will assume that you have given your consent. That is:

- i. You have read and understood the information in this email about the study
- ii. You can contact me (via my contact details listed above) if you have any questions or concerns about the questionnaire or the study
- iii. You understand that participation in this study is voluntary. You and your students are free to withdraw from the study up until the questionnaire has been submitted, without giving any reason and without any of your rights being affected
- iv. You understand that your students' responses will be treated confidentially and in confidence by the researcher
- v. Any direct quotes (that is, statements the students might write on the questionnaire) will be anonymised in the study's write-up

I look forward to hearing from you.

Thank you for your help,

[Researcher's name]

## Appendix J: Questionnaire

[Researcher's name]  
Department of Information Studies,  
Llanbadarn Fawr,  
Aberystwyth, Ceredigion,  
SY23 3AL Wales  
Email: \*\*\*\*@aber.ac.uk  
15<sup>th</sup> June 2016

### **The information needs of Occupational Therapy students: A case study Invitation to complete a Questionnaire**

Questionnaire identification number: (for researcher's use):

My name is [researcher's name] and I am a student at Aberystwyth University studying for a Masters in Information and Library Studies by distance learning. As part of my course, I am undertaking a dissertation under the supervision of Senior Lecturer Hugh Preston ([hjp@aber.ac.uk](mailto:hjp@aber.ac.uk)). The dissertation is investigating how libraries can support Occupational Therapy students' learning and evidence-based research skills in preparation for clinical practice, through better understanding your information needs.

I am writing to ask if you would be willing to help me in this research by completing the attached questionnaire. (This should take about 15 minutes of your time. Please hand your completed questionnaire to your lecturer, who is administering the questionnaire on my behalf).

Before you decide whether or not to complete the questionnaire, it is important that you understand:

- a) Why the research is being done
- b) What it will involve

Please take time to read the following information carefully. If any of the information below is unclear or if you would like more information about this research project and what it involves, then please contact me (my contact details are listed at the beginning of this letter).

All the information about your participation in this study will be kept confidential (details about how this will be done are included in Part 2 of this letter).

This investigation was subject to an ethics check by the researcher's dissertation supervisor; it was approved, so referral to Aberystwyth University's Ethics Committee was not deemed necessary. Five sets of guidelines will be followed throughout; the Department of Information Studies' (Aberystwyth University) Ethics Policy for Research, the Data Protection Act 1998, Aberystwyth University Records Management/Information Governance Policy, the British Sociological Association's Statement of Ethical Practice, and the Chartered Institute of Information Professionals' Code of Professional Practice.

**Part 1: Why am I doing this research: what is its purpose?**

The title of the dissertation is "The information needs of Occupational Therapy students: A case study". I am doing this research because little has been written about:

1. The reasons why Occupational Therapy students search for information
2. Which information sources are used by Occupational Therapy students and why
3. The barriers experienced by Occupational Therapy students when locating and accessing information

This dissertation aims to answer these questions in an effort to better understand how these information needs contribute to library use and non-use. This study therefore focuses on how libraries can support Occupational Therapy students' learning and evidence-based research skills in preparation for clinical practice.

**Part 2: What does the study involve/what is the conduct of the study?**

You have been selected because you are an Occupational Therapy student on a College of Occupational Therapists accredited degree course.

Before you complete the questionnaire, please note the following about this study:

1. **Duration:** Completing the questionnaire should take about 15 minutes of your time. Please hand the completed questionnaire to your lecturer, who is administering the questionnaire on my behalf.

2. **Confidentiality:** All the information provided will be treated confidentially. No individuals, libraries, Occupational Therapy departments or universities will be identified in the results or within the final dissertation. Any direct quotations included in the dissertation will be used selectively and anonymously (that is, no one will be able to attribute/link the words to individual students).
3. **Anonymity:** The chosen research instrument (a supervised self-completion questionnaire) means that individual and institutional anonymity is not possible until the data analysis stage of the research project (at which point the data will be anonymised). However, confidentiality and privacy are assured throughout the research process.
4. **Data security:** The anonymised data will be stored in a password protected Excel file on a password protected laptop; the printed questionnaires will be shredded as soon as the data has been transferred to the Excel file. The data file will be destroyed six months after graduation.
5. The full dissertation will be available electronically via email (\*\*\*\*@aber.ac.uk) on request.
6. **Consent:** Informed consent will be assumed on receipt of the completed questionnaire. You are free to withdraw from the study up until the questionnaire has been submitted.

If you complete and return the questionnaire, then I will assume that you have given your consent to take part in this study. That is:

- i. You have read and understood the information in this letter about the study
- ii. You can contact me (via my contact details listed above) if you have any questions or concerns about the questionnaire or the study
- iii. You understand that participation in this study is voluntary. You are free to withdraw from the study up until the questionnaire has been submitted, without giving any reason and without any of your rights being affected
- iv. You understand that your responses will be treated confidentially and in confidence by the researcher
- v. You allow me to use your direct quotes (that is, statements you might write on the questionnaire) anonymised in the study's write-up

Thank you for your help,

[Researcher's name]

# The information needs of Occupational Therapy students: A case study

**Please complete all questions**

Topic 1: The reasons why Occupational Therapy students search for information

1. While on **placement**, have you had to look for information to help with:

*Tick all that apply*

- Intervention decisions
- Patient diagnosis
- Patient education
- Patient evaluation
- Therapy outcome prediction
- Therapy procedures
- Understanding client perceptions
- Understanding the impact of a disease/condition on occupational functioning
- None

2. While on **placement**, have you wanted to look for information to help with:

*Tick all that apply*

- Caseload prioritisation
- Discharge planning procedures
- Local financial resources procedures
- Non-verbal communication skills e.g. body language, active listening
- Presentation skills
- Reflective practice
- Time management
- Using assistive equipment or technology
- Verbal communication skills with patients
- Writing skills for reports or patient records
- None

3. How do you evaluate whether research evidence is useful for a specific patient case (e.g. integrating research recommendations with the client's wishes)?

4. While on **placement**, what *clinical* tasks prompt you to look for information?

5. While on **placement**, what *non-clinical* tasks prompt you to look for information?

6. When writing academic assignments, have you had to look for information to help with:

*Tick all that apply*

- Formulating a research question
- Creating a search strategy
- Critical appraisal (qualitative research)
- Critical appraisal (quantitative research)
- How to structure an essay
- How to cite references
- How to write persuasively
- Medical terminology
- None

Topic 2: Which information sources are used by Occupational Therapy students and why

1. While on **placement**, who are you most likely to approach with a question about patient assessment or care:

Tick **two** options

- Academic lecturer
- Clinical supervisor
- Library staff
- Other OT students
- Patients themselves
- Senior OT colleague
- Other (*please specify*)\_\_\_\_\_

2. When writing academic assignments, which two information resources do you find most useful:

Tick **two** options

- Bibliographic databases
- Electronic books
- Electronic journals
- Internet search engine
- Lecture slides or handouts
- Point-of-care tools (evidence summaries)
- Print journals
- Textbooks
- Other (*please specify*)\_\_\_\_\_

3. When answering a clinical question on **placement**, which two information resources do you find most useful:

Tick **two** options

- Bibliographic databases
- Electronic books
- Electronic journals
- Internet search engine
- Lecture slides or handouts
- Point-of-care tools (evidence summaries)
- Print journals
- Textbooks
- Other (*please specify*)\_\_\_\_\_

4. When carrying out research for an academic assignment or to answer a clinical question, which bibliographic databases do you use:

*Tick all that apply*

- |  |  |
|--|--|
| <input type="checkbox"/> AMED                                  | <input type="checkbox"/> OTSeeker      |
| <input type="checkbox"/> CINAHL                                | <input type="checkbox"/> Pedro         |
| <input type="checkbox"/> Cochrane Library                      | <input type="checkbox"/> PsycINFO      |
| <input type="checkbox"/> EMBASE                                | <input type="checkbox"/> PubMed        |
| <input type="checkbox"/> ERIC                                  | <input type="checkbox"/> Scopus        |
| <input type="checkbox"/> MEDLINE                               | <input type="checkbox"/> Trip Database |
| <input type="checkbox"/> None                                  |  |
| <input type="checkbox"/> Other ( <i>please specify</i> ) _____ |  |

5. When carrying out research for an academic assignment or to answer a clinical question, which two electronic journals do you use most often:

*Tick two options*

- American Journal of Occupational Therapy
- Australian Occupational Therapy Journal
- British Journal of Occupational Therapy
- The Canadian Journal of Occupational Therapy
- Journal of Occupational Rehabilitation
- Occupational Therapy in Healthcare
- Occupational Therapy in Mental Health
- Occupational Therapy International
- Occupational Therapy and Rehabilitation
- Physical and Occupational Therapy in Geriatrics
- Physical and Occupational Therapy in Pediatrics
- None
- Other (*please specify*) \_\_\_\_\_

6. When carrying out research to answer a clinical question, do you use any of the following point-of-care tools:

*Tick all that apply*

- |  |                                    |
|--|------------------------------------|
| <input type="checkbox"/> BMJ Best Practice                     | <input type="checkbox"/> Epocrates |
| <input type="checkbox"/> ClinicalKey                           | <input type="checkbox"/> UpToDate  |
| <input type="checkbox"/> DynaMed                               |                                    |
| <input type="checkbox"/> None                                  |                                    |
| <input type="checkbox"/> Other ( <i>please specify</i> ) _____ |                                    |



7. What type of evidence do you think is most important for the following:

Tick **one** option per row

	Research Evidence	Anecdotal Evidence	Mixed
Intervention decisions			
Patient diagnosis			
Patient education			
Patient evaluation			
Therapy outcome prediction			
Therapy procedures			
Understanding client perceptions			
Understanding the impact of a disease/condition on occupational functioning			

8. What do you think are the main differences between the information resources needed by Occupational Therapy students in comparison with other Allied Health students?

Topic 3: The barriers experienced by Occupational Therapy students when locating and accessing information

1. Have you experienced any of the following barriers when accessing *print books* from your placement or university libraries:

*Tick all that apply*

- Inconsistent services between placement libraries
- Inconvenient location of the library
- Not enough books on Occupational Therapy
- Not enough copies of books
- Out-of-date books
- Unsuitable library opening hours
- Not Applicable
- Other (*please specify*)\_\_\_\_\_

2. Have you experienced any of the following barriers when accessing *electronic journals* or *electronic books* through your placement or university libraries:

*Tick all that apply*

- Complicated log-in procedures
- Complicated software installation processes
- Inadequate access to computers on placement
- Inconsistent Wi-Fi coverage on placement
- Little knowledge of the difference between library resources and freely available resources
- Little knowledge of what resources are available
- Little knowledge of where to find resources
- Not enough Occupational Therapy specific resources
- Resources are not mobile compatible
- Slow loading times
- Not Applicable
- Other (*please specify*)\_\_\_\_\_

3. Have you experienced any of the following barriers when accessing online *bibliographic databases* through your placement or university libraries:

*Tick all that apply*

- Difficulty filtering results using limits
- Difficulty formulating a research question
- Difficulty integrating research evidence with clients' wishes
- Difficulty linking to full-text articles from the bibliographic databases
- Difficulty understanding how to use subject headings when searching
- Lack of Occupational Therapy specific bibliographic databases
- Little knowledge of how to create a search strategy
- Little knowledge of how to search bibliographic databases
- Not enough Occupational Therapy specific research literature
- Too many results retrieved
- Unsure which evidence is reliable/applicable to the local clinical environment
- Not Applicable
- Other (*please specify*)\_\_\_\_\_

4. What information services would your ideal library provide for you?

Thank you!

## **Appendix K: Coding frame**

### **Motivators for information-seeking (overarching theme 1)**

#### **Academic assignments**

Written academic assignments

- Information literacy skills
  - Formulating a research question
  - Searching efficiently for the best available evidence
  - Formulating a search strategy
  - Using relevant bibliographic databases
  - Critically analysing evidence
- Writing proficiency skills
  - Citing references
  - Structuring an essay
  - Writing persuasively
- Medical terminology

Verbal academic assignments

- Presentation skills
  - Delivery techniques
- Presentation content
  - Slide design
  - Structure
  - Medical terminology

#### **Evidence-based practice - clinical role requirements**

Formulating a research question

- Understanding diseases and conditions
  - Anatomy
  - Medical models of health
    - Mental health
    - Physical health
  - Medical terminology
  - Nursing terminology
  - Medical interventions
    - Medication side effects
  - Diagnosis
    - Clinical presentation
    - Stage of illness
  - Prognosis
  - Sociocultural context
- Conducting assessments
  - Occupational Therapy models of practice
  - Standardised assessment procedures
    - Physical capabilities
    - Cognitive processing
    - Functional activities
  - Non-standardised assessment procedures
    - Physical capabilities
    - Cognitive processing
  - Functional activities

- Intervention planning
  - Psychological (cognitive behavioural therapies)
  - Psychodynamic (creative or outdoor therapies)
  - Humanistic (counselling and positive reinforcement)
  - Physical (bio-mechanical (remedial exercise programmes with functional goals), compensatory (adapting the physical environment))
  - Rehabilitative (activities of daily living, remedial activities, work simulation and leisure)
- Outcomes prediction and evaluation
  - Goal setting
- Discharge planning
- Searching efficiently for the best available evidence
  - Filtering
    - Patient age limits
    - Patient gender limits
    - Patient's sociocultural background
    - Publication date
- Critically analysing evidence
  - Currency
  - Quality
    - Author's subject specialty
    - Author's reputation
    - Validity of quantitative and qualitative research
    - Publisher/author's agenda
  - Intellectual level
  - Clinical relevance
    - Holistic
    - Occupation-focussed
    - Client-centred
    - Ward or community setting

## **Workplace skills**

### Soft workplace skills

- Written communication
  - Report writing
  - Writing case notes
  - Writing discharge letters
  - Taking minutes
- Team working
- Understanding the roles of other healthcare professionals
  - Physiotherapists
  - Social workers
  - Mental health nurses
  - Speech and language therapists
- Signposting (contact details for related teams)
- Careers information

### Hard workplace skills

- Resources management
  - Local discharge processes

## **Preferred information resources (overarching theme 2)**

### **Human information resources**

- Colleagues
- Clinical supervisor
- Senior OTs
- Nurses
- Physiotherapists
- Doctors
- Librarians

### **Printed information resources**

- Books
- Journals

### **Electronic information resources**

- Internet search engine
- E-journals
- Bibliographic databases

## **Barriers inhibiting the satisfaction of information needs (overarching theme 3)**

### **Information literacy skills**

- Training needs
  - Searching efficiently for the best available evidence
  - Formulating search strategies
  - Using relevant bibliographic databases
  - Locating full-text articles
- Information-seeking confidence

### **Accessibility**

- Resources
  - Too few copies of books
  - Complicated log-in procedures for e-resources
  - Slow access to e-resources
- Services
  - Inconvenient library opening hours
  - Inconsistent Wi-Fi coverage and speed
  - Too few computers
  - Poor signage for Occupational Therapy books
  - Limited study space

### **Availability**

- Resources
  - Irrelevant books
  - Inappropriate for the setting
  - Too generalised
  - Out-of-date
  - Unrelated to Occupational Therapy practice
  - Limited scope (not holistic)
  - Small range of books
  - Small range of full-text e-journals

- Not enough Occupational Therapy specific e-resources
- Limited subscription access to bibliographic databases
- Lack of research evidence
  - Difficult to translate existing research into clinical practice
  - Inadequate evidence relating to specific client groups
  - Limited integration of mental and physical health evidence
  - Lack of mixed methods research
  - New profession - many specialties under researched

**Library staff**

- Staff skills
  - Formulating search strategies
  - Knowledge of Occupational Therapy related databases
  - Locating full-text articles
  - Confidence building
- Staff availability
- Staff awareness of Occupational Therapy
  - OTs' roles
  - OTs' scope of practice

## Appendix L: Sample coded qualitative data

### Questionnaire identification number 5:

Question 1.3: How do you evaluate whether research evidence is useful for a specific patient case (e.g. integrating research recommendations with the client's wishes)?

Answer: "I would look at the **diagnosis** the person has and whether the research focuses on the **diagnosis** and the **length of time the person has had the diagnosis, the prognosis**, the **person's age**. I would also look at the **authority and background of the author – are they a specialist in their subject area? Is the work up to date and still clinically relevant?"**

Question 1.4: While on **placement**, what *clinical* tasks prompt you to look for information?

Answer: "Anything that I am unfamiliar with or anything where I lack the skills and knowledge required to be able to conduct the task competently. Such as **completing assessments, applying models of practice, working with other professionals such as physios to understand their role, working with doctors to understand medical definitions.**"

Question 1.5: While on **placement**, what *non-clinical* tasks prompt you to look for information?

Answer: "**Presentations (e.g. techniques on delivery, layout, structure etc) Writing case notes"**

Question 2.8: What do you think are the main differences between the information resources needed by Occupational Therapy students in comparison with other Allied Health students?

Answer: "OT students need a **wide scope of information on both mental illnesses and physical illnesses"**

Question 3.4: What information services would your ideal library provide for you?

Answer: "**Career information and signposting** to help students and graduates find jobs  
Providing full text research articles, not just being able to access the abstract through the library

Wide range of books, electronic resources, up to date books and relevant books, library services subscribed to all journals that OT students may need – not just some

**Tuition sessions on how to access and search databases** by staff who understand what OT is"



## Key

**Red** = Motivators for information-seeking, Evidence-based practice, Formulating a research question, Understanding diseases and conditions

**Turquoise** = Motivators for information-seeking, Evidence-based practice, Searching efficiently for the best available evidence, Filtering

**Dark green** = Motivators for information-seeking, Evidence-based practice, Critically analysing evidence, Quality

**Gold** = Preferred information resources, Human information resources, Colleagues

**Yellow** = Motivators for information-seeking, Academic assignments, Verbal academic assignments, Presentation skills/Presentation content

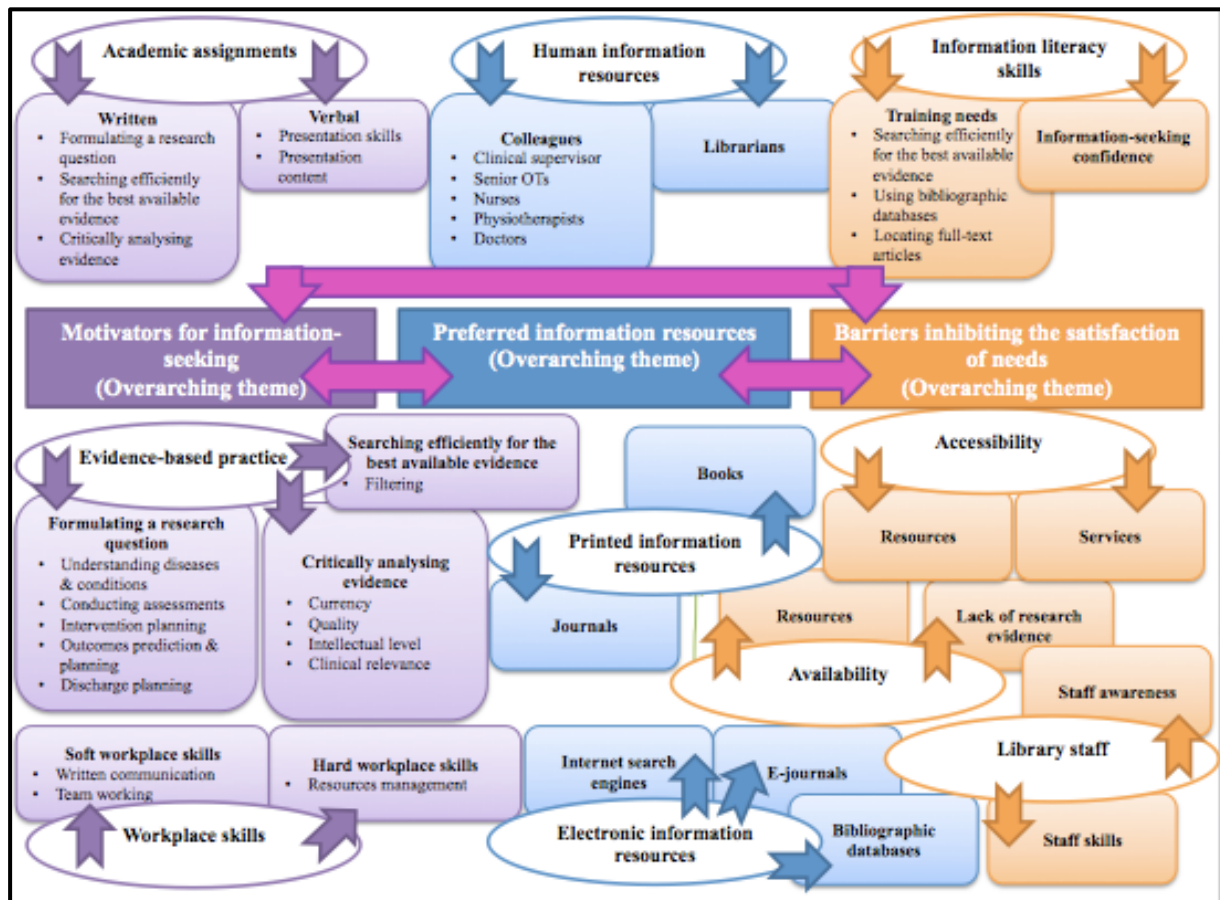
**Green** = Motivators for information-seeking, Workplace skills, Soft workplace skills, Written communication, Careers information

**Grey** = Barriers inhibiting the satisfaction of information needs, Availability, Resources

**Light green** = Barriers inhibiting the satisfaction of information needs, Information literacy skills, Training needs

**Pink** = Barriers inhibiting the satisfaction of information needs, Library staff, Staff awareness of Occupational Therapy, Searching efficiently for the best available evidence

## Appendix M: Thematic map



## Appendix N: Quantitative data matrix (extract)

### Data dictionary

The following values and labels were assigned when the data was coded for entry: 0= No, 1= Yes, DA= Did not answer, RE= Respondent error (too few or too many fixed answers were selected).

<b>Coded data for question number 2.3</b>									
<b>Questionnaire identification number</b>	<b>Bibliographic databases</b>	<b>E-books</b>	<b>E-journals</b>	<b>Internet search engine</b>	<b>Lecture slides or handouts</b>	<b>Point-of-care tools</b>	<b>Print journals</b>	<b>Textbooks</b>	<b>Other</b>
<b>1</b>	0	0	0	1	1	0	0	0	0
<b>2</b>	0	0	0	1	1	0	0	0	0
<b>3</b>	DA	DA	DA	DA	DA	DA	DA	DA	DA
<b>4</b>	RE	RE	RE	RE	RE	RE	RE	RE	RE
<b>5</b>	0	0	1	1	0	0	0	0	0
<b>6</b>	0	0	1	0	1	0	0	0	0
<b>7</b>	0	0	1	0	0	0	0	1	0
<b>8</b>	0	0	0	1	0	0	0	1	0

<b>Univariate frequency table for question number 2.3</b>			
<b>Variable</b>	<b>Number of responses</b>	<b>Total number surveyed</b>	<b>Percentage positive response</b>
Internet search engine	4	6	67%
Electronic journals	3	6	50%
Lecture slides or handouts	3	6	50%
Textbooks	2	6	33%
Bibliographic databases	0	6	0%
Electronic books	0	6	0%
Point-of-care tools	0	6	0%
Print journals	0	6	0%
Other	0	6	0%