Chapter 2

Methodology for the Social Media Usage Analysis

Nursing education has undergone enormous upheaval as a result of changes in the way nursing is given, as was briefly summarised in the prior chapter. There was also an explanation of how technology in nursing education may be used to produce tools like SM, and the importance of knowing how SM impacts the learning of undergraduate students. This chapter will in include an explanation of the chosen methodology, where this review employed the "pragmatism" epistemology approach in order to answer the review question. PRISMA flowchart has been created to show the full process. Additionally, in the search strategies, two methods were used to find the data needed to answer the research question, the first search strategy was the back-chaining approach, and the second search strategy is conducted through different databases. Finally, ethics and rigour were also parts of this chapter.

2.1 Introduction

This paper provides a systematised literature review that follows the principles of systematic review established in the published literature. A systematic review gives a comprehensive review of primary research to address a specific clinical question (Kysh, 2013). However, this study will provide in-depth analysis of the usage of SM and its impacts on undergraduate nursing students. A systematised review of the literature takes a structured approach to conducting a literature review in order to answer a specific question, detailing the methodology, identifying, analysing, critiquing and synthesising pertinent research, and presenting results and recommendations (Aveyard, 2019). According to Grant and Booth (2009), a systematised review involves several features of the systematic review process; nevertheless, it does not necessarily produce results that can be said to be the product of a systematic review. The present postgraduate researcher had chosen to apply a systematised review, as it is deemed to be a suitable method for researching how SM affects undergraduate nursing students. In addition, this method is useful for confirming current information while highlighting research methods' flaws and addressing past studies' gaps in understanding (Grant & Booth, 2009). However, reviewing the literature in a systematic way has some limitations – for example, several reviews have failed to summarise the included studies adequately (Dahabreh et al., 2012). One of the most notable weaknesses that the researcher has encountered is that finding appropriate resources is complicated. To illustrate, some authors may have insufficient academic abilities and experience to adequately perform a complete systematic review, due to the difficulty involved in obtaining two reviewers and the limits of time. Despite the fact that systematic reviews are the benchmark in research, Haddaway et al. (2015) note that researchers who work independently have constraints.

As a result of these concerns, the current postgraduate student believes that a systematised review would be the most appropriate research method for this particular topic. A literature review identifies the most important viewpoints and offers enough information to confirm that the author has a good understanding of all the different arguments related to the issue they are researching before their own study begins (Snyder, 2019). It is also possible that researchers might use a literature review to

add to current knowledge by contributing a new and useful concept (Natriello, 2000). The outcome of literature research is helpful in discovering knowledge gaps that must be addressed, and how likely it is that these will be accomplished through literature (Robinson et al., 2013). In addition, it can influence research that will be conducted in the future as the review's findings and recommendations can generate assumptions on which other studies will be undertaken (Moule et al., 2017, p. 80; Snyder, 2019). However, it is obvious that the author is aiming for a thorough literature review, but readers must bear in mind that this one is systematically structured, and as such cannot possibly meet the standards of a true systematic review (Grant & Booth, 2009).

Because of this, the current researcher conducted an analysis of the available literature, with a particular emphasis on the use of SM among undergraduate nursing students, with the goal of generating new knowledge that can be applied to the field of nursing education. In order to conduct a successful literature review, it is critical to understand the impact of bias. When planning to carry out a systematic literature review, it is important to note that each individual study is capable of impacting the quality of the entire research since the overall quality of the research is influenced by the bias present in individual studies (Dwan et al., 2008). To reduce the risk of bias, this review utilises a systematic method with the following five phases: formulating a research question; demonstrating the research strategy; collecting the data; analysing the data; and presenting the findings (Thoma & Eaves, 2016). According to Anderson et al. (2008), a literature review incorporates the findings of several investigations, instead of depending on a single piece of research. Thus, this review will discuss the significant impacts of using SM with nursing students, and how it can provide the required improvement for nursing education and for the students themselves.

Moule et al. (2017, pp. 41–42) state that research is divided into two types, primary and secondary. Primary research is utilised when conducting a literature review. It is either quantitative or qualitative, and data are collected via surveys or interviews, among other methods (Johnson & Christensen, 2017). It is widely recognised that qualitative articles offer rich and diverse data that can be integrated with quantitative data to generate varied findings (Hammell & Carpenter, 2004); because of this, this literature review left the first search for literature open to every kind of publication that could be found.

2.2 Research topic

The topic of the current paper is the usage of SM among undergraduate nursing students. The current author has always considered that the impact of the use of SM in its various forms in the educational field has not yet been sufficiently explored, particularly among nursing students at the undergraduate level; this observation led the researcher to conduct this review. Holland and Rees (2010) and Mertens (2005) claim that knowing about a subject matter is critical to the process of performing a literature review.

2.3 Formulating research question

In terms of formulating the research question in this review, Aveyard et al. (2016, p. 70) recommend that frameworks be used to determine the question and the primary themes to be investigated. A framework (PICO) was used to develop the question in the literature review process, which NICE (2020) highlighted in their guidance. PICO is a quality evidence-gathering strategy that is effective for

decisions backed by evidence (Schardt et al., 2007). PICO is also known as a framework for organising clinical research questions for evidence-based evaluations; however, the PICO model can be used in a systematic review too (Eriksen & Frandsen, 2018). Although the author acknowledges that there are alternative frameworks available for research question generation, the author felt that employing PICO to identify the major themes and research questions would facilitate effective research (Cooke et al., 2012). Furthermore, it has been shown that when the PICO framework is not used, questions are unlikely to be answered (Huang et al., 2006). The elements of the PICO framework are population, intervention, comparison and outcome, which were selected based on a logical sequence to ensure high levels of objectivity (Krithikadatta, 2012). As a result of this approach, the following research question was developed, see **Table 1**.

Table 1: *PICO framework for the study*

No.	PICO Framework	Suggested Elements
1.	Population	Undergraduate nurses.
2.	Intervention	Social media platforms (social networking sites) that are being used as educational tools.
3.	Comparison	There will be no comparisons made.
4.	Outcome	• Changes in knowledge, skills or cognitive skills of students. • Perspectives of nursing students towards this pedagogical approach. • Measures such as the number of students satisfied or engaged could be considered, and this could include details such as the students' experiences with social media.

2.4 Choice of methodology

In order to understand the data-gathering process, you need be aware of the philosophy and methodology behind a certain study (Patkar, 2018). This moreover delivers a cogent study design with strong ontological and epistemological underpinnings (Al-Saadi, 2014). Reality and the author's views are based on the author's notion of knowledge, which also encompasses ontology and epistemology. What is reality? (Levers, 2013), this is the question that ontology is dealing with and it "deals with what there is" (Andina, 2016, p. 12). With an ontological perspective, the author must consider how it might make sense of the existence of knowledge demonstrating the impact of SM on nursing students. With an ontological perspective, the author must consider how they might make sense of knowledge demonstrating the impact of SM on nursing students. Andrews (2016) points out that ontology revolves around how reality is understood, while epistemology is "The theory of knowledge embedded in the theoretical perspective and thereby in the methodology" (Al-Ababneh, 2020, p. 77).

Despite the fact that literature reviews are essential to advancing scientific knowledge (Boell & Cecez-Kecmanovic, 2014; Jennex, 2015; King & He, 2005; Webster & Watson, 2002), there is no epistemological paradigm for literature reviews as far as it can be told, and in agreement with the belief that epistemology is the philosophy of knowledge (Martinich & Stroll 2014). However, Aveyard (2007) recommended creating one's own "hierarchy" of evidence for any literature review. Therefore, this review employed the "pragmatism" epistemology approach in order to answer the review question. According to (Creswell & Clark, 2018) pragmatism is inextricably tied to the necessity for mixed-methods research. According to Maarouf (2019), in the "pragmatism" approach, the advantages of one method are augmented by exploiting the advantages of the other. Nevertheless, the pragmatic method has its limitations too. To illustrate, specialists in the research field who follow the pragmatic approach have much more freedom to conduct their studies due to the weak effect of aspects of the philosophy in such a matter, and mainly the utmost attention is paid to what can make a valuable addition to the work instead of following ideal examples, which sometimes seem different from the reality and its circumstances (Brierley, 2017).

2.5 Search strategy

The purpose of the search strategy is to discover all the articles about a specific topic that have been previously published and which also fulfil the parameters of the selection process (Godin et al., 2015). Two strategies were employed to uncover relevant data to answer the question presented in this paper. The first search strategy was the back-chaining approach, as suggested by Relevo (2012). This was employed to check reference lists. The second search strategy is conducted through different databases. Published journal papers can be found through electronic databases (Brown, 2012). Databases provide access to information with little fuss or waste of time, and computerised searches can be carried out (Younger, 2004). There are different types of databases, depending on the subject area (Grewal et al., 2016). An electronic search was performed of CINAHL, PubMed and Science Direct, as these contain papers on clinical and health topics. However, multiple databases should be used due to the impossibility of finding all the required articles on the same database (Honest et al., 2003). The resources included and facilities used supplied by Coventry University.

Table 2: *Key words used in the database search*

No	Key words
1.	Undergraduate student
2.	Nursing student
3.	Social media
4.	Education

Keywords were used in the search process. Keywords facilitate finding relevant articles (Cooper et al., 2018), see **Table 2.** The MeSH terminology was utilised in this review, in addition to the Boolean operators "AND" "OR" "NOT" with the keywords to narrow the scope of the search results (Devillé et al., 2000, p. 66). The "OR" operator can be employed to link synonyms, while the "AND" operator is

used to limit or reduce the number of search engine results with a greater degree of concentration on the same topic, and the term "NOT" is also used to eliminate items that did not fall within the scope of the project (Jacquette, 2008). To illustrate, the researcher used "nurse*" OR "nursing*" AND "student" OR "education*" AND "social media" OR "social network sites*" OR "SM*" OR "SNSs" OR "Facebook" OR "Twitter" OR "Instagram", See **Table 3.** PICO was used to make the searching process easier (Eriksen & Frandsen, 2018, p. 421), see **Table 1.** The results from the database were uploaded to Mendeley and then the chosen articles were transferred to Microsoft Excel.

Table 3: *MeSH terms*

No.	Sample of PubMed search strategy with MeSH terms
1#	Nurse*
2#	Student*
3#	"Social media"
4#	1# OR 2# AND 3#

2.6 Inclusion and exclusion criteria

It is essential to identify the inclusion and exclusion criteria once the research question has been formulated. This offers a chance to explicitly outline the methods that will be used to find the relevant literature that addresses the topic presented by the review (Moule et al., 2017, p. 43). Aveyard et al. (2016) argue that the inclusion and exclusion parameters should be clearly defined prior to beginning the literature evaluation so that any relevant research papers will be identified. Most research articles are written in English, and no other languages have as large a population in the scientific community (Hultgren, 2019). This review therefore included research articles written in English, full text humans, and primary peer-reviewed publications. The time range in all databases was restricted to the last ten years. NMC (2019, as cited in NHS Improvement, 2020, p. 8) recommend that reviews use up-to-date published papers; however, a period of ten years was set in this study due to the limited number of published papers on this topic. All types of research design are included, but theses, grey literature and conference papers are excluded. It is recommended that a table is employed to help the literature review identify which aspects will serve as inclusion and exclusion criteria (Aveyard et al., 2016) – see **Table 4** for the full inclusion and exclusion criteria.

Once the essential search keywords, databases and inclusion and exclusion criteria have been identified, Aveyard et al. (2016) and Moher et al. (2009) suggest using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines in a flowchart, to detail the article selection procedure as well as the reasons for articles being excluded from the review (see **Figure 1**). Database outcomes for each database engine are provided in **Tables 5, 6** and **7,** see also **Appendix 2.** Excluded studies that were checked for eligibility are given in **Appendix 4.**

Table 4: *Inclusion and exclusion criteria for the database search*

No.	Inclusion	Exclusion
1.	All types of primary research designs.	Thesis, grey literature, and conference papers.
2.	In English language.	Unpublished research papers.
3.	Full text and peer reviewed.	Non-English articles.
4.	10-year period of publication from 2011 to 2021.	Papers published before 2011.
5.	All regions of the world.	
6.	Papers that focus on social media.	Papers that focus on another subject area.
7.	Students of all ages	

**Table 5:** *CINAHL Database Search*

Search terms	Database outcomes
Social media AND nursing student	473
Dates from 2011 to 2021	453
English language	428
Full text	134
Full text exclusion	134
Full text included in the literature review	0

Table 6: *PubMed Database Search*

Search terms	Database outcomes
Social media AND nursing student	458
Dates from 2011 to 2021	415
Academic journals	402
English language	394
Full text	378
Full text exclusion	376
Full text included in the literature review	3

Table 7: *Science Direct Database Search*

Search terms	Database outcomes
Social media AND nursing student	11,265
Dates from 2011 to 2021	6,450
Research articles	3,969
Full text exclusion	143
Full text included in the literature review	5
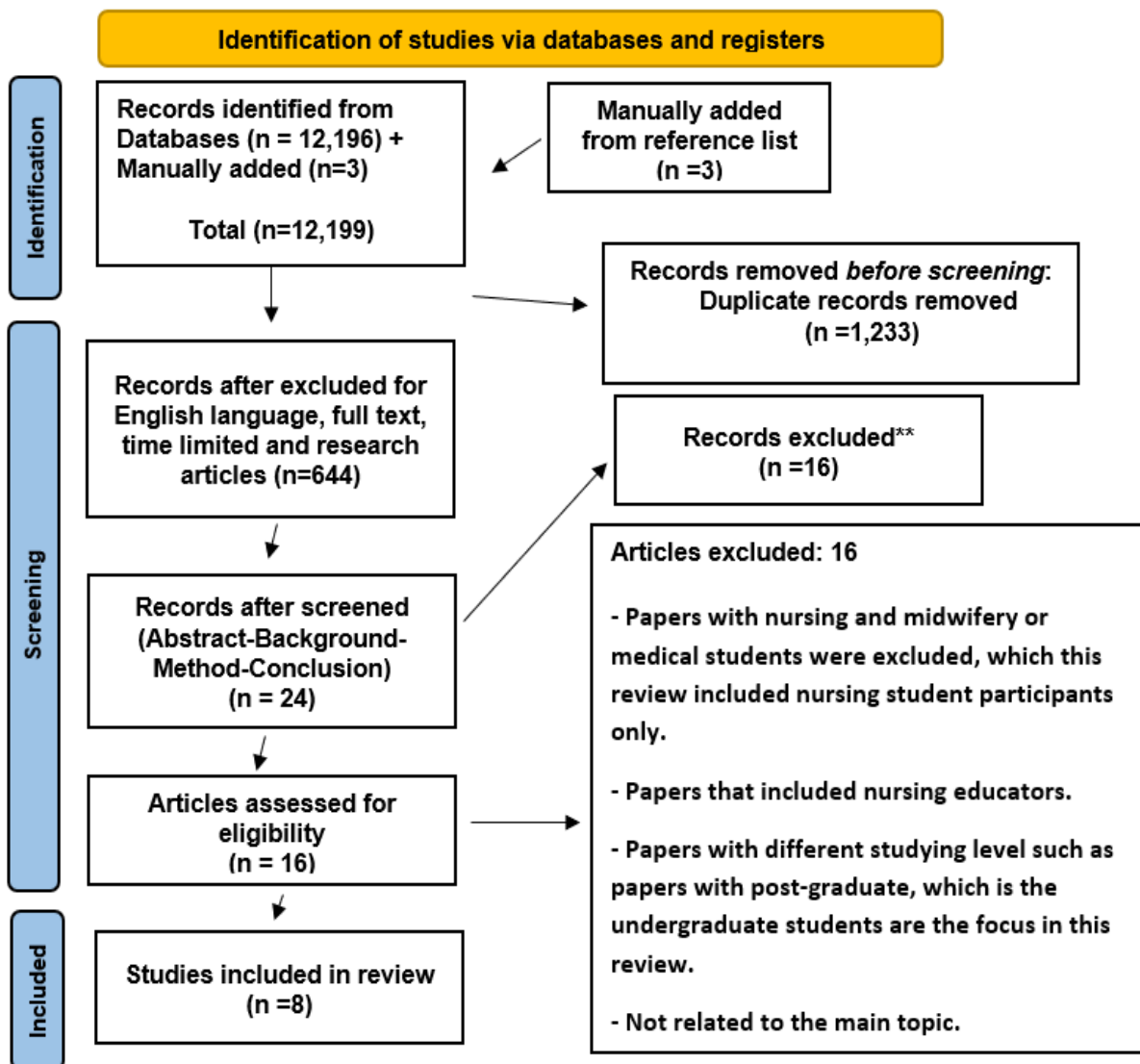
Note: this diagram shows the findings that have been included and excluded. From http://www.prisma-statement.org/, by Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Figure 1. *PRISMA flowchart*

2.7 Quality appraisal

When conducting a systematised review, it is suggested that the research papers being considered are critically evaluated in order to determine whether or not each particular study properly addresses the various aspects of research quality (Prel et al., 2009). Similarly, Gerrish and lathlean (2015) claim that appraisal tools help to identify the strong and weak points of any research. In order to be credible, literature reviews must offer unbiased and reliable evidence (Winchester & Salji, 2016). According to the National Health and Medical Research Council (NHMRC, 2019) the risk of bias will be increased if no appraisal tool is used through the analysis process while conducting a literature review. Therefore, it is vital to use the appropriate appraisal tool. It was decided to use the Critical Appraisal Skills Programme (CASP) and the Joanna Briggs Institute (JBI) tool to assist the evaluation process in this review, in addition to the mixed methods appraisal tool (MMAT), which is recommended by Hong et al. (2019). Nadelson and Nadelson (2014) state that CASP is brief and includes all the material necessary to properly evaluate articles. The CASP tool was created to evaluate the various methodologies, including qualitative and quantitative methods and systematic reviews (CASP, 2020). According to Ma et al. (2020), for qualitative papers the most commonly suggested tool is CASP, as well as the tool developed by the JBI for the appraisal of qualitative and quantitative data, recommended by Munn et al. (2014). Using a critical appraisal tool may help to identify an article's importance in relation to the literature review (Morrison, 2017). However, there seems to be no critical appraisal instrument with "gold standard" criteria for any research (Katrak et al., 2004). The CASP appraisal tool includes different questions for each part of a research paper, which allows for an assessment of how data are obtained, the study design used, ethics and rigour, and other factors, using a simple yes or no response method, with subsequent questions encouraging further insights into the article (CASP, 2020). Although the researchers' understanding of the study topic will allow them to locate relevant research articles (Snyder, 2019) an appraisal tool such as CASP is necessary for a full analysis when conducting a literature review (Ma et al., 2020). Additionally, CASP is advised for researchers who are fresh to the field, as well as those who prefer straightforward methods to address everyday issues about scientific investigation (Singh, 2013). Nevertheless, according to Hannes et al. (2010) when compared to other tools, CASP does not evaluate a paper's methodological quality properly. Therefore, in order to conduct a thorough appraisal of the articles under review, the JB appraisal tool was also used for assessment of quantitative and qualitative methodologies (Munn et al., 2014).

2.8 Data synthesis

This procedure involves the collection, sorting and organisation of crucial data acquired from each article and the subsequent presentation of this information in an understandable and concise way (Berg et al., 2013). Pluye and Hong (2014) suggest that throughout the data synthesis phase, a sequential explanatory design should be used in order to conduct mixed analysis. In the case of quantitative data, this approach is very useful for explaining and understanding relationships between variables, particularly when the results are unexpected or unexpectedly large (Creswell & Clark, 2018). However, one of the design's drawbacks is that it is time consuming as it necessitates the gathering of both qualitative and quantitative data from a variety of publications (McBride et al., 2019).

The data synthesis was carried out by the current author and reviewed with the dissertation supervisor on a regular basis in order to ensure consistency in the analytical process. To evaluate how effective SM is in influencing student performance, first and foremost, the continuous variables from the quantitative method studies were gathered and analysed to assess their effectiveness. In a systematic review, meta-analysis might be included in the synthesising process if the results vary widely (Imrey, 2020), due to its capability of recording every bit of information that is sent during an intervention and evaluating it even if there are no discrepancies in the information (Sterne et al., 2001); however, this review did not adopted this approach. In terms of the SM styles utilised in the studies under review, the outcomes obtained and other features, it was anticipated that there would be a significant amount of variation. For the purpose of explaining how SM affects students' learning, articles that were inappropriate for statistical analysis were presented in more depth in a narrative form (Mays et al., 2005). Then, qualitative data were gathered and analysed in order to provide an explanation for the quantitative findings acquired in step one (Ivankova et al., 2016). The findings were moulded into themes via the use of coding and categories, which were used throughout the analytical phase (Bauch et al., 2011). Performing thematic analysis of the literature review will verify that the findings are credible and that the methodology used is solid and rigorous (Nowell et al., 2017). The quantitative data and their analysis provided a broad understanding of the research issue, while the qualitative data and their analysis provided a more in-depth exploration of the views of the participants (Ivankova et al., 2016). After that, the results from both stages were integrated. This was applied through the use of "joint displays" in order to ensure successful integration of the systems involved (Guetterman et al., 2015).

2.9 Ethics

According to Polonsky and Waller (2021), ethics guidelines in research are an important aspect to be considered and followed by a researcher, since the ethics support the advancement of the research goals, including gaining new information, seeking the truth, and reducing and avoiding mistakes (National Institute of Environmental Health Sciences, 2020). At the other end of the scale from traditional primary researchers, researchers of secondary resources do not gather highly intimate, critical or private data from participants (Suri, 2020). When conducting a systematic review, systematic reviewers rely on publicly available records as evidence, and they are infrequently obliged to obtain institutional ethical clearance prior to beginning their work (Suri, 2020). Nevertheless, the articles that are included within a systematic review must meet strict ethical guidelines (Tripathy, 2013; Weingarten et al., 2004). Therefore, every article that is a possible contender for inclusion in the literature review should be evaluated, and this will involve looking into the main research ethics as well as deciding whether the work is appropriate for inclusion. This also guarantees that any future studies based on the findings of this literature analysis have a solid, rigorous and ethical foundation, in addition to facilitating the publishing process (Kelley et al., 2003; Wu et al., 2019).Therefore, it is not surprising that organisations and universities have created numerous standards and policies on research ethics because they understand how important they are (National Institute of Environmental Health Sciences, 2020). One of the criteria of Coventry University before beginning data collection is

to obtain ethical clearance from https://ethics.coventry.ac.uk/. A copy of the ethics approval for this literature review can be found in **Appendix 1.**

2.10 Rigour

A standard approach to performing mixed research reviews that is internationally recommended was adopted (Pluye & Hong, 2014) – this is the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) framework (Page et al., 2021). In addition, the ENTREQ statement as recommended by Tong et al. (2012) was employed to provide details on the outcomes of the review.

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