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An Examination of Nurses' Knowledge of Ostomy Care in the Acute Care Setting

By

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Table of Contents

Acknowledgements.....	3
Abstract	6
1 Chapter 1 Introduction	7
2 Chapter 2 Methodology.....	9
2.1 Research design.....	10
2.2 Inclusion and Exclusion Criteria.....	12
2.3 Quality Appraisal	13
Figure 1 PRISMA Flow Chart.....	15
3 Chapter 3 Findings	16
3.1 Data Extraction Chart	19
3.2 Analysis of Data.....	24
3.3. Thematic Maps	25
4 Chapter 4 Discussion	27
4.1 Knowledge deficit in relation to osotmy care	27
4.2 Confidence in providing osotmy care	28
4.3 Roles and responsibilities in relation to osotmy care.....	29
5 Chapter 5 Recommendations and Conclusion	31
6 References	34
7 Appendices.....	39

List of Tables and Figures:

Table 1 Illustrates the PICO tools and acronyms used for formulation of research question..	10
Table 2 Illustrates the synonyms that were used to search the literature	11
Table 3 Inclusion and Exclusion Criteria.....	12
Figure 1 PRISMA Flow Diagram.....	15
Table 4 Data Extraction Table.....	19
Figure 2 Thematic MAP	
Table 5 Thematic Analysis Resulting in Theme 1	25
Table 6 Thematic Analysis Resulting in Theme 2	25
Table 7 Thematic Analysis Resulting in Theme 3	26

Appendices:

Appendix 1 Letter to Editor	39
Appendix 2 Critical Appraisal Tool (CCAT) Forms 1-10.....	40

Abstract:

Aim: To examine nurses' knowledge of ostomy care in the acute care setting.

Design: An integrated literature review.

Method: A systematic search of databases which included Cinahl, Medline (pubmed), Scopus, Psycinfo and Cochrane from September 2019 up to January 2020. Hand searching of identified literature was also undertaken. PRISMA guidelines were used to report the search, research articles included in the review were appraised for quality using Crowe Critical Appraisal Tool and data analysis was performed using Braun and Clarke (2006) framework for thematic analysis.

Results: Findings from 10 studies were extracted, synthesised and analysed thematically. Three themes emerged Knowledge Deficit in relation to Ostomy Care, Confidence in providing ostomy care and roles and responsibilities in relation to ostomy care.

Conclusion: Such knowledge needs to be delivered to nurses via a mechanism that is accessible and where its effectiveness can be audited. In addition to specialised training and education, nurses need support in their delivery of ostomy care, particularly where their exposure to stoma care is limited. Supports should include access to evidence-based policies and protocols on stoma care and referral to specialist services eg a CNS in stoma care.

Keywords: Ostomy, nurses' knowledge, acute care setting

Chapter 1: Introduction

In Europe there are approximately 700 000 people with an ostomy and in the USA this figure is more than one million (Claessens *et al.* 2015). In Ireland alone, since 2015, approximately 7000 people are recorded to have a stoma (ISCCNA 2019). These numbers are increasing yearly. A stoma, a Greek word meaning mouth or opening, also referred to as an ostomy, is a surgically formed opening where the bowel is brought through the abdominal wall to enable faecal/urinary output to be eliminated from the body (Burch and Black 2017). It is a common procedure as part of a treatment plan for both benign and malignant conditions. Such conditions include colorectal cancer, diverticular disease, chrohns disease, ulcerative colitis, trauma or faecal incontinence. Surgery resulting in ostomy formation can be elective or performed as an emergency and the ostomy can be permanent or temporary. There are three main types of ostomy, colostomy, ileostomy and ileal conduit also called a urostomy.

Developments in surgical techniques such as more laparoscopic surgery and enhanced recovery programmes have reduced surgical patients' hospital stays (Roulin *et al.* 2013, Buchanan *et al.* 2008). The reduced stay associated with these developments narrows the opportunity for specialist nurses for teaching patients with ostomies which necessitates input by the nursing staff in an acute setting. Stoma care nursing is both acute and long term, as patients are never discharged from the service (Burch 2008). With ostomy numbers increasing, knowledge of ostomy care and management among nurses, particularly in an acute setting is vital to ensure quality patient ostomy care and education, even with the availability of clinical nursing specialists. Bulk of the nursing care post operatively is provided by the staff nurses on the ward 24/7. Complications of stomas early post operatively can be common due to surgical factors, site selection and stoma construction (Hendren *et al.* 2015). Interventions to prevent stoma complications are mainly due to patient education and counselling (Phatak *et al.* 2014). The staff nurses on the wards as part of the surgical teams need to be able to reinforce what the clinical nurse specialist has taught the patient and to provide continuity ensuring holistic quality care. In the absence of specialist nurses the ward nurses needs to have access to good ostomy care resources.

Lack of knowledge, limited time due to busyness of an acute ward, no availability of specialist nurses, or abdication of responsibilities due to specialist nurses availability can all lead to

obstacles in providing optimum ostomy care. Having an ostomy is a life changing event for the patient. In order to overcome these obstacles the staff nurses in the acute setting needs knowledge to help them fit that ostomy into their life. The benefit of good nursing ostomy knowledge greatly contributes to the patient attaining the best possible quality of life within their diagnosis and prognosis.

Chapter 2: Methodology

The methodology chapter describes the search strategy that was developed and utilised to locate studies relevant to the review topic that is an examination of nurses' knowledge of ostomy care in an acute care setting. The goal of this integrated review is to answer the research question in a systematic manner (Bettany-Saltikov and McSherry 2016). The PICO framework was used to formulate the question used in the review. The method used for the integrated review will then be presented in a 5stage process, which is consistent with the PRISMA (preferred reporting items for systematic reviews and meta-analysis (2009) guidelines.

2.1 Research design:

A systematic review is a summary of the research literature that is concentrated on a single research question (Polit and Beck 2012). A rigorous systematic search is required, which involves selection, appraisal, synthesis and summary of the findings of primary research studies in order to answer a specific question (Parahoo 2014). Qualitative research is recognized as explanatory, descriptive and inductive in nature (LoBiondo-Wood and Haber, 2014). Researchers seek to understand the nature of the phenomena by attending to personal accounts of those with direct experiences related to the phenomena in the qualitative approach (LoBiondo - Wood & Haber 2014). In contrast, quantitative research explores the phenomena that lend themselves to detailed measurement and quantification, involving a rigorous or controlled design (Polit and Beck 2012). The main purpose of quantitative research is to measure variables objectively and to examine, by numerical and statistical procedures the relationship between them (Parahoo 2014). Mixed methods research consist of quantitative and qualitative methods and have become every common in modern research (Bethany-Salthkov and McSherry 2016). The inclusion of quantitative and qualitative research approaches have the potential to play a greater role in providing evidence based research practice (Bettany-Saltikov and McSherry, 2016). The integrated review facilitates a systematic approach that allows inclusion of studies with a range of methodologies (Whittemore and Knafl, 2005) including quantitative, qualitative and mixed method designs. An integrated review is more relevant to answer this research question because the actual question can be answered using qualitative, quantitative or mixed methods designs.

Wakefield (2014) recommends the first step in a systematic review is to formulate a researchable question. In order to search the main concepts in the search question a search tool is developed by organising a framework (Methley *et al.* 2015). Numerous frameworks can be used to develop a focused review question (Riesenberg and Justice, 2014). Three or four elements should be included in a robust research question (Fleming 1998). Examples of frameworks include SPICE-Setting, P-perspective, I-intervention, C-comparison E-evaluation and PEO, P-population E-exposure and O-outcome. (Riesenberg & Justice 2014).

The PICO tool was utilised to guide this comprehensive question in this review. PICO is recommended when the review topic is quantitative in nature (Bettany-Saltikov & McSherry, 2016). In this review the majority of the articles are of quantitative nature PICO is an acronym where **P** presents the population that is being researched, **I** represents Intervention, **C** represents control or comparison group and the **O** signifies the outcome of the intervention (Bettany-Saltikov 2010a). PICO provides a way of presenting articles of research interesting for and relevant for the systematic review (Bettany-Saltikov 2010a). PICO is useful to structure a question and help identify relevant research to address the review question “Nurses knowledge of ostomy care in the acute care setting”.

Table 1: PICO tool for question formulation

P	Population	Nurses
I	Intervention	Care of ostomy patients
C	Comparison	N/A
O	Outcome	Knowledge base

2.2 Literature Search

The next part of the systematic process is to select databases to conduct a literature search (Wakefield 2014). Halladay *et al.* (2015) identified the added value of using different databases for different topics. However, Rice *et al.* (2016) suggest there are instances where searching one database can be sufficient to address the question provided the database searched is the most relevant and focused for the area reviewed. This however can only be stated with certainty when other databases have been searched. Bramer *et al.* (2016) have concluded that a single database is not sufficient to retrieve all references for systematic reviews. It is essential to select databases that offer the most suitable and relevant research articles relevant to the research

question (Bettany-Saltikov 2010a). Many different databases were utilised to search the literature for this review. These included **CINAHL, Medline (Pubmed), Scopus, Psychinfo and Cochrane databases**. These databases were selected for the type of information that they contain and their relevance to the research question. The CINAHL database focuses mainly on nursing and allied health professional research and is deemed a useful database when the research question relates to nursing information (Bettany-Saltikov and McSherry 2016). The Medline database contains information that is most relevant to medicine, human biology and general physiology. It is deemed a good database for all clinical and physiological questions (Wakefield 2014). The Scopus database offers peer-reviewed research and is a wide-ranging resource to support research needs in the scientific, technical, medical, social sciences, arts and the humanities fields (Bartels 2013). The Psychinfo database primarily focusses on data relating to psychology, behavioural and mental health sciences. The Cochrane library includes systematic reviews, meta-analysis and randomised control trials (Wakefield 2014). The breadth and depth of information provided within these databases should contribute to answering the review question. Other searches included hand searches, examination of grey literature, and google scholar as computerised database may only produce 50% of appropriate searches (Whittemore and Knafl 2005)

It is important to identify all synonyms relating to the research question and then to combine them using specific words called Boolean operators (Bettany-Saltikov 2010b). These are words AND, OR or NOT used in searches to combine different keywords or phrases. Applying the operator AND will narrow the search while OR will expand the search. NOT was used for exclusion purposes e.g. care of children with ostomies were not included as the question was related to adult ostomy patients only. The boolean phrases in each search was nurse and ostomy or stoma patients and nurses knowledge. This limits search results to documents containing just keywords. To help extend the selected synonyms and to find the relevant literature, wild cards may be used to expand the search even further (Wakefield 2014). These wild cards are usually presented as an asterix * and can be used to broaden out searches for alternative spelling of words (Bettany-Saltikov and McSherry 2016) e.g. nurs* shows nurs or nurse or nurses or nursing.

Table 2: List of search strings that were used in search of databases

P	And	Nurs* or Nurses or Nursing
I	And	Ostomy* or Stoma* Or Colostomy or Ileostomy or Ileal Conduit
C	And	N/A
O		Knowledge* Or Understanding Or Confidence*Or Awareness

2.3 Inclusion and Exclusion Criteria:

The next step is deciding the criteria for including and excluding articles in the review. It is imperative for a researcher to identify the criteria used to include and exclude studies in the review (Bettany- Saltikov 2010a). It is so the final inclusion in the research study are explicit. Torgerson (2003) suggests that a high quality review should have inclusion and exclusion criteria that are rigorously and transparently reported before carrying out a review. The inclusion and exclusion criteria are a list of factors designed to limit the number of articles reviewed so that only the most appropriate are included (Aveyard 2018). This means that the researcher has to select all studies that will definitely be included in the review, may not be included in the review and studies that will eventually be rejected from the review (Bettany-Saltikov 2010b). The final results from each of the searches were analysed, examined and duplicates removed. The criteria should be obvious and emanate from the review question keeping in mind the PICO components. The full details of the search are provided in the PRISMA format in figure one. This format shows the step-by-step elimination process that was undertaken in order to find the final articles for inclusion in the review.

Table 3: Inclusion and exclusion criteria

<p>Inclusion Criteria:</p> <p>Primary research relevant to the review question</p> <p>Assessing nurses’ knowledge in relation to ostomy care of adult patients only</p> <p>Research published from 2009-2020</p> <p>Peer reviewed</p> <p>Studies written in English</p> <p>Qualitative, quantitative and mixed methods studies</p>

Exclusion Criteria:

Studies not relevant to the review question including those referring to nursing student's knowledge

Reports on secondary research and discussion papers

Studies that referred to nurses' knowledge in relation to ostomy care of children

Studies published before 2009.

Published in language other than English

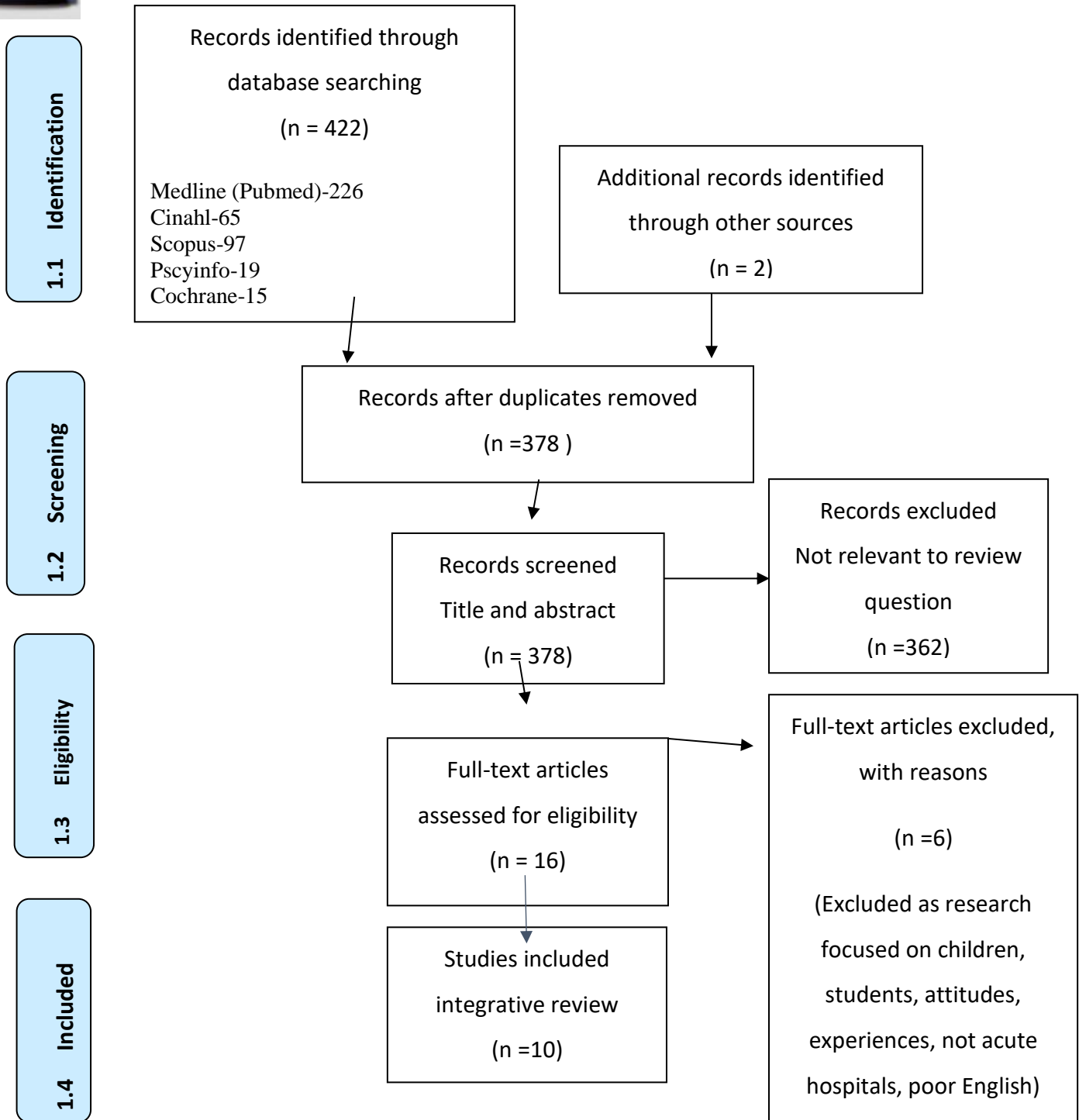
2.4 Quality Appraisal:

The included literature needs to be judged to the degree to which the study results are likely to approximate the 'truth' (Higgins and Deeks 2009) and be free from or acknowledge methodological biases (Petticrew & Roberts 2006). Wakefield (2014) discusses critiquing research literature as the sixth out of seven steps and sees it important to extract and analyse data correctly. Systematic reviews may contain a variety of qualitative, quantitative and mixed methods designs, and it can be difficult to appraise and incorporate different types of data in a structured manner without using an appraisal tool e.g. CCATs. (Crowe & Sheppard, 2011). In a systematic review the quality of evidence and conclusions generated depends on the quality of the primary studies being used (Bettany-Saltikov & McSherry 2016). The quality of these studies must be appraised as not all studies are valid and reliable (Parahoo 2014). Appraisal of research papers enables exploration and comparison of the differences in study results which then guide interpretation of their findings and their value to nursing practice (Bettany-Saltikov & McSherry 2016). The Crowe Critical Appraisal tool was used for this systematic review as it facilitates appraisal of all types of study designs (Appendix 2). The tool is divided into 8 categories and 22 items. Each item has multiple item descriptors making it easier to appraise and score each category. The lowest score a category can achieve is 0 and the highest is 5. The categories included are preliminaries, introduction, research design, sampling, data collection, ethical matters, results and discussion. Each article was quality appraised to assess the value of the research study and if it answered the review question. Eleven papers were reviewed using CCATs. One paper was excluded due to lack of clarity and language so the final number of papers used was ten. The lowest scoring of research papers appraised using the CCAT format in this review was 25/40(60%). The cut-off point to be included in the review was research that scored under 25/40. Research which attracted lower scores on appraisal often emanated from a

lack of clarity in relation to the language used or if the text wasn't clear and concise. Low scores were also given if the research provided insufficient detail on the research design or there was bias in the study, which was not acknowledged. Similarly, low scores were given if relevant ethical issues were not addressed appropriately or if the data collection and samples methods were not clear. The highest scoring research paper achieved 37/40 (93%). After analysing, synthesising and critiquing the research studies the writer completed a summary of the findings from the literature reviewed in data extraction table 4 (Crowe 2013).



Figure 1: PRISMA 2009 Flow Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Chapter 3: Findings

The next chapter outlines the finding of the review. Of the ten studies used for the review, seven were quantitative, one used mixed methods and two were qualitative designs. All studies were undertaken in acute hospitals and were published between 2009-2019. Studies reviewed were geographically diverse but only one was from Europe which was Turkey. Literature is scarce is about nurses knowledge and confidence in caring for ostomy patients (Zimnicki and Pieper 2018) Therefore there was limited amount of research was to address the question ‘Nurses’ knowledge of ostomy care in an acute care setting’. Mainly research more focused on the on the quality of life, ostomy complications, and use of stoma devices (Nieves *et al.* 2017).

The research undertaken by Cross *et al.* (2014) (n=576) demonstrated higher confidence, knowledge and skills in ostomy care among nurses who were longer qualified, had more experience, more specific training and greater exposure to ostomy care. The highest reported confidence was associated with pouch emptying while poor knowledge was identified with regards to the nutritional requirements of ostomy patients. Similarly a cross sectional study undertaken by Durek and Ucar (2013) showed that less than half of respondents (n=43) had cared for osotmy patients on a regular basis and that nurses knowledge level of intestinal stoma was inadequate. This was attributed to the lack of specialised training in ostomy care. In addition, 30 nurses said they were happy to undertake further education to specialise in the practise. The median scores of nurses were significantly higher in knowledge for those who had completed ostomy training, reported that they had read professional literature and attended education sessions than the nurses who had no training. Nurses were asked who they deemed responsible for ostomy care. Responses from 25 nurses suggested the patient or family, 25 suggested the physician, 23 suggested a stoma care nurse, and 13 suggested staff from ostomy manufacturers. Therefore, a significant number of the participants (n=86) did not perceive as stoma care as their responsibility.

In contrast, Li *et al.* (2019) study reported that more than half of the respondents (n=134) provided direct ostomy care. Similar to Cross *et al* (2014) and Durek, and Ucar (2013) findings, the nurses who underwent formal ostomy training had better knowledge of the care required for patients with an ostomy. The vast majority of respondents expressed a desire for more training and guidance from a specialist in ostomy care. Limited staffing and heavy workloads were also identified as a barrier to accessing additional training, which led to a less than optimal teaching and learning environment. Bale (2010) recognised it was difficult for nurses to leave their

nursing unit so the author created a computer accessible ostomy training module that nurses could use. 103 staff nurses completed the pre-test questionnaire about ostomy care, then completed the ostomy care training course and completed the post-test questionnaire. Nurses stated in the post test questionnaire that they felt more knowledgeable and confident in looking after ostomy patients following completion of the module. In Gemmil *et al.* (2011) study 19 nurses were assessed about their knowledge on ostomy care. 15 of the nurses felt confident to care for their patients with an ostomy while 6 agreed or strongly agreed that they care for patients with ostomies often enough to keep up their skills in ostomy care. Fourteen of the nurses knew whom to call if there was problem about ostomy care e.g. an ostomy-specialised nurse. Only six nurses agreed that there was adequate staff education or in service opportunities. In contrast to Gemmil *et al.* findings, in the study by Cross *et al.* (2014) 115 out of 576 nurses were unaware if an ostomy nurse practised at their institution. A review of a surgical note is an important part for determining the location and type of ostomy yet in Gemmil *et al.* (2011) study only four nurses read the operation notes pertaining to the ostomy surgery. Reading the operation note is important in all nursing care but especially when looking after a new ostomy patient to know how much bowel is left after the surgery and what part of the bowel was removed. Knowledge of the colon is key when looking after a colorectal ostomy patient. This is echoed by Bhzeh *et al.* (2013) when they carried out a descriptive study on 60 nurses in a university hospital in Egypt. The findings identified a weak relationship between knowledge and practice regarding nursing care standards of a colostomy. 50 nurses had a satisfactory level of knowledge about a colostomy but yet only 6 nurses understood the types of colostomy. 16 nurses had a knowledge about what cause a colostomy, 5 recognize the physiology of the colon and less than half (n=28) could had knowledge of the anatomy of the colon (Bhzeh *et al.* 2013). Bagheri *et al.* (2016) carried out a cross sectional study in a teaching hospital in Iran amongst 63 nurses. In contrast to Gemmil *et al.* (2011) and Bhzeh *et al.* (2013) findings, more than half of the nurses scored a high percentage on recognising different types of intestinal ostomy. Knowledge of ostomy products, diet and fluid intake was high in comparison to the study by Cross *et al.* (2014). However, knowledge was low in in areas such as signs and symptoms of obstruction, duration of size change in ostomy and complications of an ostomy. Teaching ostomy was the nurse's job however changing the appliance was the healthcare assistant's job. Overall 48 nurses assessed their knowledge as moderate to low (Bagheri *et al.* 2016). A study by Oliveria *et al.* (2019) in Brazil assessed 30 nurses and 70 nursing technicians on their knowledge of ostomy care. Results noted that less than half of nurses provided correct answers relating to management of intestinal stomas both pre-operatively and postoperatively.

The findings revealed that nursing technicians had higher correct response rates in relation to their knowledge of marking stomas pre-operatively in comparison to nursing staff. This is of concern giving that this is not one of the nursing technician's primary responsibilities. Marking of stomas preoperatively is the responsibility of appropriately trained nurses and doctors involved in the patients care. Findings show that more training was needed. Similarly, Ardigo and Amante (2013) qualitative study where they conducted semi structured interviews among 9 nurses, 11 nursing technicians and 3 nursing assistants found that nurses also felt did not have specialist knowledge and that their general education gives a broad overview of care of ostomy patients but updating of training is essential. Such specialist education had consequences for patients too, the nurses felt the patients who were better prepared pre operatively by nurses adapted to their ostomy better. Consequently, more updating of education is needed among nurses to ensure appropriate pre-operative education is provided to patients. In Lapkin *et al.* (2018) qualitative study nurses reported a lack of stomal therapy nursing knowledge and supported the need for more documented, multidisciplinary, individualised care plans for patients with a stoma.

Deficits and inadequacy of nursing knowledge related to ostomy care is shown in all these studies.

3.1 Table 4: Data Extraction Table

Author and Journal	Title	Year and setting	Aim	Type of study Data collection tool Sample Size	Key Message	Themes
Durek,N &Ucar, H. Journal of Wound, Ostomy and Continence Nurses Society (J WOCN)	Staff Nurses' Knowledge and perceived Responsibilities for Delivering Care to patients with Intestinal Ostomies	2013 Acute Care Hospital in Ankara Turkey	Exploring the opinions of nurses concerning their knowledge of and perceived responsibility for providing ostomy care	A Cross-sectional Study. Questionnaire 100 nurses	Nurse's knowledge was not at desired level. They were assessed by two sections in the questionnaire 1) Queries descriptive information about nurses, the perceived responsibilities for providing ostomy care 2) 54 items that focused on knowledge about stoma care. Nurses didn't see themselves responsible for stoma care.	Lack of knowledge Less than half of the nurses had regular exposure to ostomy care Not responsible for ostomy or stoma care
Cross,H., <i>et al.</i> J WOCN	Staff Nurse confidence in Their Skills and Knowledge and Barriers to Caring for Patients With Ostomies	2014 3sites: academic medical centre, a veteran's administration centre and a not for profit hospital in New York America	Examining the confidence and perception of barriers among hospital staff nurses when caring for ostomy patients	Descriptive Cross-Sectional study Electronic survey used 576 nurses	Nurses with most experience (no of years qualified), training and frequent exposure to ostomy patients scored the highest confidence in knowledge in looking after ostomy patients. 1 in 5 nurses were unaware of certified ostomy nurse practised at their institution	More exposure to ostomy patients More training opportunities needed Lack of knowledge about the presence of an ostomy nurse as a resource for caring for their patients

<p>Gemmil, R <i>et al.</i></p> <p><i>The Journal of Continuing Education in Nursing</i></p>	<p>What do Surgical Oncology Staff nurses know About Colorectal Cancer Ostomy Care</p>	<p>2011</p> <p>Inpatient surgical oncology floor and ICU at a designated comprehensive cancer centre in the southern California</p> <p>America</p>	<p>A pilot study that describes the acute care oncology staff nurses' knowledge about the attitudes toward providing direct ostomy care and support</p>	<p>Pilot study used a mixed method descriptive study design</p> <p>Survey- 1st section 6 demographic questions, followed by 22 items on knowledge and ostomy care. 2nd section 15 item Likert scale addressing staff nurse confidence and attitudes about the ability to care for ostomy patients. Last section opened ended questions about resources barriers and comments</p> <p>19 Nurses</p>	<p>Knowledge of the principles of post-operative ostomy care was moderately good but there was room for improvement</p>	<p>Knowledge of caring for people with ostomies could improve</p> <p>Ongoing staff education needed for low-volume patient populations</p> <p>More resources</p> <p>More experience needed</p>
<p>Bhzeh <i>et al.</i></p> <p>Medical Journal of Cairo</p>	<p>Colostomy: Developing Nursing Care Standards for patient with a colostomy</p>	<p>2013</p> <p>Assiut University Hospital, Egypt</p>	<p>To establish level of nurses' knowledge and practice to develop a nursing care standard for patients with a colostomy</p>	<p>Descriptive research design –questionnaire and practise checklist dived in two parts – sociodemographic characteristics of nurses& part 2 assessment of nurses' knowledge</p>	<p>Nursing knowledge and practice standards in colostomy care are at an unsatisfactory level</p>	<p>More knowledge needed</p> <p>To continue in-service training programs for nurses</p>

				60 nurses		
Oliveira <i>et al.</i> <i>J Nurs UFPE</i> <i>online</i>	Knowledge About The Management of Intestinal Stomas of Elimination	2019 Public Hospital North east region Brazil	To verify knowledge of nursing professionals on the care of patients with stomas	Quantitative descriptive and exploratory study Sociodemographic questionnaire and an instrument of survey of knowledge 30 nurses 70 nursing technicians	A frequency of less than 50% correct answers related to ostomies in the pre and post-operative period answered by nurses	Knowledge to improve More training needed
Bales, I Ostomy Wound Management	Testing a computer-based ostomy Care Training resource for staff nurses	2010 Acute care facility in Midwestern US America	A computer based module to assess its effect on staff nurse confidence in providing ostomy care	Pre and post-test questionnaire 103 staff nurses	Differences in the pre and post-test questionnaires were statistically and indicated significant increases in confidence and knowledge of ostomy skills	Need for ongoing education regarding ostomy care for nurses

Bagheri <i>et al.</i> Jundishapar j Chronic Dis Care	Nurses knowledge about Fecal Intestinal ostomies's Care: A cross – Sectional Study	2016 Ghaem,Imam Reza,Omid hospitals Iran	To determine knowledge of nurses in general surgery wards when looking after patients with faecal ostomies	Cross sectional study Questionnaire on demographic information and assessment of knowledge in ostomy care 56 nurses	More than half the nurses gave incorrect answers in relation to ostomy accessories, and scored low levels of knowledge of general symptoms and management of ostomies	Knowledge levels scored low about the prevention and control of ostomy complications More training needed More experience needed Different roles to certain aspect to ostomy care
Li <i>et al.</i> J WOCN	Practice and training needs of staff nurses caring for patients with Intestinal Ostomies in Primary and Secondary Hospitals In China	2019 Primary and secondary hospitals Sichuan Province China	To describe staff nurses' intestinal ostomy care practice in primary and secondary hospitals	Descriptive cross sectional Questionnaire used 1 st section demographic and professional practise,2 nd practice in relation to patients with intestinal ostomies 3 rd queried nurses' stoma related training needs 214 nurses	The more training and education the nurses had improved their knowledge base of ostomy care Lack of manpower and heavy workload of daily nursing were identified as leading barriers to continuing education in ostomy area of practice	More training needed Workload review
Ardiago & Amante	Knowledge of the professional about nursing care of people	2013 University hospital	To assess the knowledge of the nursing professional	Qualitative, exploratory and descriptive research	Not enough education among all participants to care for the specialised patients	More training and education required

Text Context Nursing, Florianopolis	with ostomies and their families	Brazil	regarding a person with an ostomy	Semi structured interviews 9 nurses,11 nursing technicians,3 nursing assistants		Nurses felt they were not specialized in ostomy care. Ostomy Nursing care mostly provided by the family
Lapkin <i>et al.</i> Journal of Stomal Therapy Australia	What's the plan? Supporting individualised care for hospitalised patients with stomas	2018 Large Metropolitan Hospital Sydney Australia	To explore ward nurses understanding of their role in caring for patients with a stoma	Qualitative, descriptive approach Face to face focus group interview 6 nurses	Lack of stomal therapy nursing knowledge and skills. Individualised care plans needed for patients	More support for regular in service training More care plans

3.2 Analysis of data;

The data from the findings were then reviewed to ascertain common themes and subthemes emanating from the data in an effort to address the review question; '*An examination of nurses' knowledge of ostomy care in the acute care setting*'. Wakefield (2014) advises that there are three approaches which a researcher can adopt to present their research findings, chronological, methodological and thematic. The thematic framework described by Braun and Clarke (2006) was used to determine themes and subthemes from the data. Thematic analysis is a method for identifying, analysing and reporting themes within the data (Braun and Clarke 2006). A thematic approach uses elements of chronological and methodological approaches (Wakefield 2014). To begin this process, all studies included in the findings of the systematic integrated review were analysed and common themes identified from the reviewed literature. Braun and Clarke (2006) describe a six step process. This process includes the author first familiarising themselves with the data. Then from this generating initial codes by organising relevant data. The codes were colour coded and organised into potential themes. Then a thematic map was generated and themes were defined and named and produced into a report (fig 2). Three main themes were identified from the findings: Knowledge deficit in relation to ostomy, Confidence in producing ostomy care and Roles and responsibilities in relation to ostomy care with associated subthemes.

3.3 Figure 2 Thematic Map

Theme	Subtheme
-------	----------

Table 5

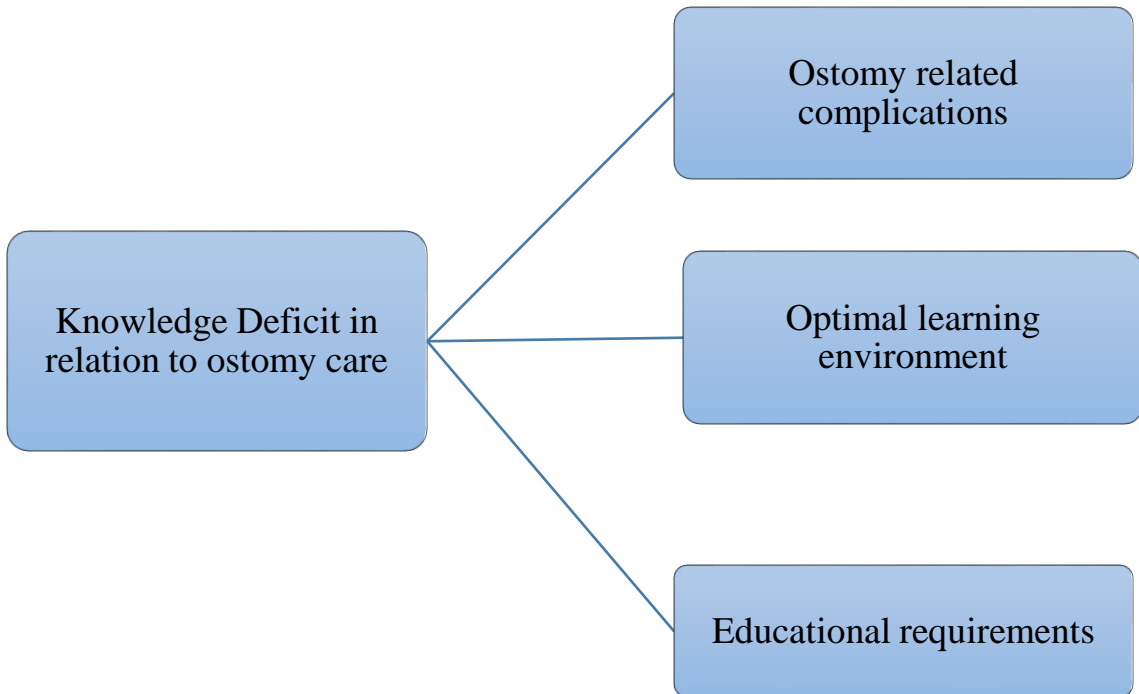


Table 6

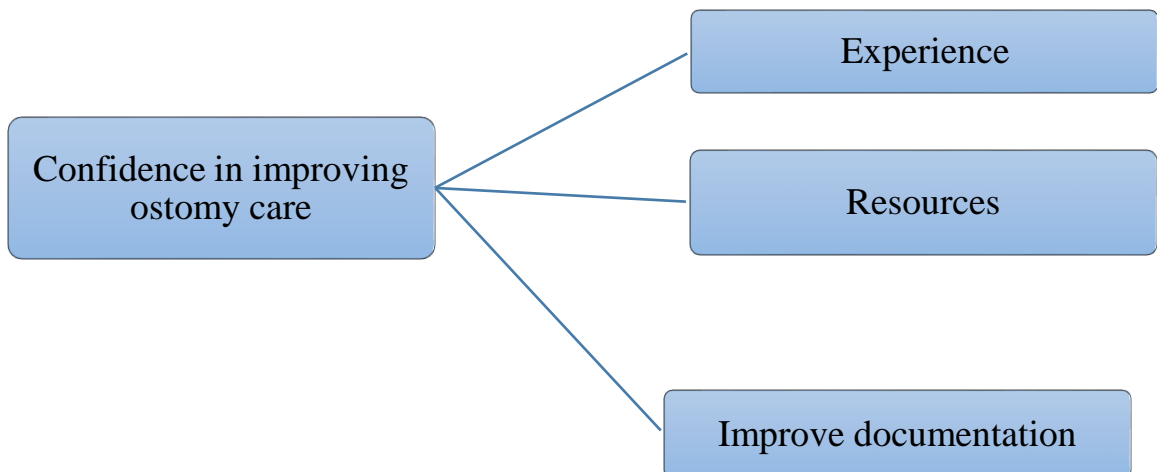
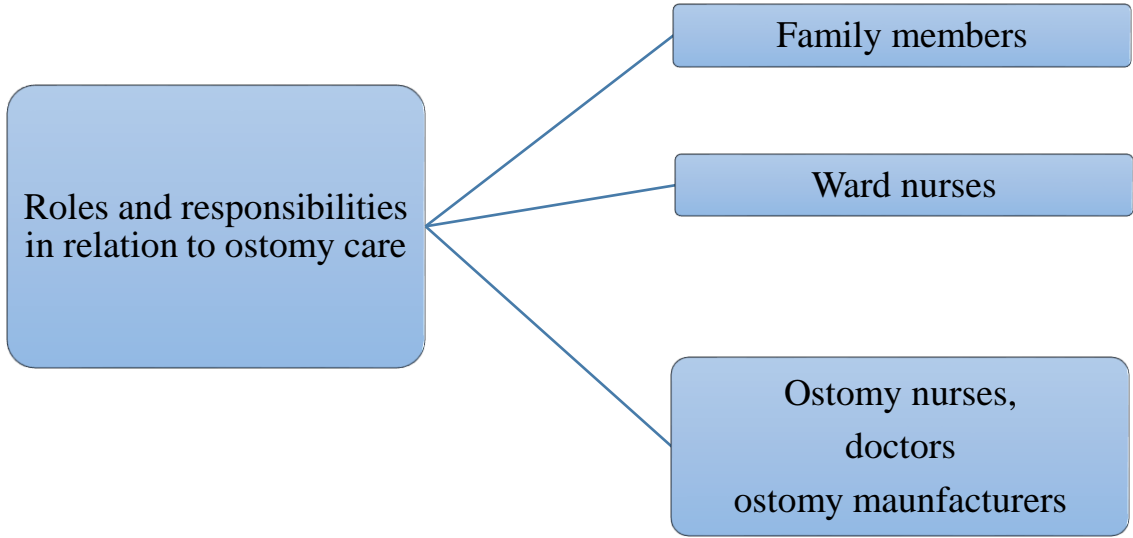


Table 7



Chapter 4: Discussion

Three common themes were identified from the reviewed literature that are described in the findings section. This chapter will discuss these themes and their associate's subthemes in relation to other relevant literature.

4.1 Knowledge deficit in relation to ostomy care:

Nurse's play a key role in in caring for patients with ostomies pre and post operatively and therefore need to be knowledgeable to help patients to adjust and care for their ostomy. In all ten studies in this integrative review, a knowledge deficit in relation to ostomy care is identified. This finding is supported by Thorpe *et al.* (2014) qualitative study by where ward nurses appear to only focus on practical care such as changing and emptying ostomy pouches as they didn't feel confident in using stomal accessories such a pastes and powders. The patients interviewed in the same study (Thorpe *et al.* 2014) concurred and suggested nurses lacked confidence in the skills of ostomy care which was attributed to nurses lack of knowledge. According to the Irish practice standards of stoma care, patients should be referred to the nurse specialists for pre op information, education and guidance (ISCCNA 2016). Staff nurses need to be aware of this to ensure these patients are referred to the specialist nurses. The nurse specialist needs to mark the abdomen of the patient preoperatively (site the patient) and in their absence; it is the surgeon's responsibility (Porrett & McGrath 2005). Stoma siting in the optimal position reduces the risk of post-operative complications (Rust 2011) and therefore it is vital that this knowledge deficit is addressed. A deficit in education and training contribute to the specialised knowledge deficit. Bossom (2009) acknowledges that training staff can become difficult due to time and resource pressures. Stronge and Burch (2019) note that stoma training events can often be distal to nurse's workplaces and can therefore be prohibitive to attendance at educational events. The provision of online education can help overcome the barrier of travelling to educational events as evidenced by Bale (2010) included in this review. Alencar *et al.* (2018) carried out a study to report the effectiveness of distance education on ostomy knowledge in a study. A quasi-experimental before and after study was conducted among 41 primary care nurses. Using a virtual learning environment, five nurses obtained above 80% in pre-test while 32 obtained scores of 80% post-test showing a significant improvement in ostomy knowledge using online learning.

4.2 Confidence in providing ostomy care

Seven of the reviewed studies highlighted the importance of confidence in providing ostomy care. Careful and accurate ostomy documentation can educate inexperienced nurses, empower nurses and improve their ostomy skills, thus improving the quality of patient care (Lapkin *et al.* 2018). Good record keeping is part of the professional and legal accountability of registered nurses and midwives (NMBI, 2015). A study by Law *et al.* (2010) carried out in a London hospital explored the role of stoma care documentation in a clinical setting. This study considered how documentation can be improved and the factors that affect the process of record keeping were examined. Medical notes of 56 patients were analysed and 14 nurse's views were examined via focus groups. Findings from the study demonstrated that stoma care documentation were not fully completed by the nursing staff, attributed to a lack of standardisation and the time consuming nature of record keeping. Consequently, documentation in relation to stoma care was revised and implemented in the ward. This was well received by nursing staff and it resulted in better documentation to stoma care leading to an improvement to patient care (Law *et al.* 2010). Teaching days were arranged for staff to attend every 3 months where all attending nurses have an introduction to stoma care and related terminology for the documentation. These sessions were positively evaluated and Law *et al.* (2010) note the importance of reviewing documentation on an ongoing basis. Improved documentation can contribute to more holistic and improve patient outcomes (Di Gesaro 2012). Nurses called for more resources such as books and videos to help teach and support the patient new to having an ostomy (Gemmil *et al.* 2011, Li *et al.* 2019). In service training can also promote confidence in providing ostomy care. A study McGeever (2013) in a UK hospital described the development of an in service training programme by a surgical lead nurse and the lead colorectal nurses. The purpose was to improve colorectal and stoma care skills and knowledge of nurses working on a ward that had a high proportion of colorectal surgical patients. After the educational programme was completed, the nurses involved felt it was beneficial to them. Nurses felt more confident and more of an integrated part of the colorectal multidisciplinary team. The clinical setting can be the best place to learn relevant clinical skills but staff shortages and patient needs can make it impractical to facilitate this learning (Gould & Chamberlain, 1997). A quasi-experimental design study carried out by Hashem and Abusaad (2016) to improve nurse's knowledge and practices regarding children with intestinal ostomies had similar findings. This study involved 35 paediatric nurses, 17 of which had good knowledge before the education programme implementation. Following completion of the programme, 28

nurses had good knowledge, demonstrating the benefits of stoma education to nurse's confidence and patient care. The importance of exposure to stoma care cannot be overlooked as it facilitates nurses becoming more confident in stoma care. In a study by Sun *et al.* (2014) whose purpose was to describe the health care experiences of long term colorectal cancer survivors (>5years) with ostomies. Thirty-three survivors who took part in the quality of life survey. When questioned survivors said they had both positive and negative experiences while learning to look after their ostomies. Positive experiences were largely due to interactions with experienced and competent nurses, and survivors talked about the importance of having experienced nurses who taught them how to manage their ostomies. Negative learning experience involved nurses who did not know how to change the bag, which was frustrating for the survivors. Nurses who have positive attitudes toward patients with ostomies were also reported to feel more confident in caring for ostomies. In a study by Andrews & Sharma (2013) attitudes of surgical oncology nurses toward ostomy care were examined. Out of 50 nurses, 32 nurses had positive attitudes towards ostomies. Having positive attitudes, 40 of nurses were confident they had the knowledge background to care for ostomy patients sufficiently. Confidence appeared to be closely linked to positive attitudes in relation to ostomy care.

4.3 Roles and responsibilities in relation to ostomy care:

There were diverse opinions among nurses as to whom should be responsible for the care of patients with ostomies in four of the studies. Providing quality care to patients is the central role of the nurse (Walker and Lachman 2013). Where available a specialised nurse should be consulted in relation to ostomy care (ISCCNA 2016). The expertise provided by nurses with speciality training help decrease ostomy complications as a result of better ostomy knowledge (Durek and Ucar 2013). This is echoed by Li *et al.* (2019) and Cross *et al.* (2013). Too often, these specialised stoma care nurses are seen by the ward staff as bag changers (Newcombe 2019) when stoma care nurses should be investing their time and energy in educating staff and patients in stoma care. Ward nurses perceive ostomy care as a confusing and time-consuming task (Bossom 2009) understandable if these nurses have not been appropriately educated in stoma care. In experienced nurses may also lack time management skills and the ability to prioritise patient care in a busy setting (Newcombe 2016) as well as having a knowledge deficit in stoma care. The context of busy, acute health care settings must be considered where nurses simply do not have the time to provide this time-consuming care. Valuable support for ostomy care can be offered by commercial ostomy companies (Foskett 2011). However this can lead to

concern that they companies directly or indirectly influence health professionals in clinical practise (Lazarus 2006) which may have a commercial element. In a study completed by Jones *et al.* (2017) to assess satisfaction, discharge needs and follow up concerns of patients within an enhanced recovery after surgery (ERAS) program. Out of 219 patients, 82 had ostomies and they all stated in hospital information regarding there stoma was from a specialised enterostomal nurse. Fifty patients said ward nurses contributed to ostomy information given and 24 said they received ostomy care information from the surgeons. Family members such as spouses can play an important role in the ostomy patients care (Ardiago & Amante 2013). Sometimes the presence of a carer/family member will increase patient confidence in ostomy care especially when important information has to be conveyed (Borwell 2009).

Chapter 5: Recommendations & Conclusions

This review examined nurses' knowledge of ostomy care in the acute care setting and identified a number of issues which have implications for clinical practice and some areas that require further study were also noted.

It is apparent that nurses within acute care settings have insufficient knowledge in relation to stoma care. This could have considerable impact on the quality of patient care provided. This deficit of knowledge needs to be addressed urgently and the most cost-effective way to do this is to harness available resources e.g. the Clinical Nurse Specialist (CNS) for stoma care. The role of the stoma care nurses or CNS is to educate staff and help them develop stoma care knowledge and skills in the ward environment (Williams *et al.* 2007) which is incorporated into their job descriptions. Within the framework of the CNS pathway, the CNS must facilitate clinical staff development and education (NCNM 2008). The stoma care CNS must also liaise and share education and information with colleagues in the clinical area as highlighted in the Practice Standards of Stoma Care delivered by the Irish Stoma Care and Colorectal Nurses Association (ISCCNA 2016). Therefore, it is clear the clinical nurse specialist (CNS) has a significant role in the education of non-specialist staff (Bossom 2009). Ward nurses need to be empowered to provide basic stoma care and the CNS needs to see this as a priority of the role of specialist. The CNS supporting and skilling a cohort of nurses in stoma care is far more effective use of his/her time than providing the stoma care to the patients themselves. Without such a focus, the non-specialist staff become deskilled and disempowered (Bossom 2009). Patients too will benefit from more holistic care if ward staff are confident and competent in stoma care.

However, even where a CNS is employed, workload which includes teaching patients to manage their stomas, pre-operative assessments, follow up clinics may impact on ability to educate and train staff nurses. A careful review of workload of CNSs by their line managers is required to ensure that their education responsibilities to colleagues are not neglected where the priority always is direct patient care.

A busy, complex environment where staffing levels are an issue also militates against release of staff for stoma specific education sessions. It is essential that the needs of staff are identified via training needs analysis but also to consider how best to ensure that training needs are met. Conventional study days or sessions may not be feasible, instead alternative means need to be explored e.g. the CNS supporting and educating staff on patient care on the ward and identifying

a regular slot at perhaps handovers where the CNS could provide a short information session. Provision of accessible online resources could also enhance nurses' knowledge on stoma care as evidenced by Le *et al.* (2019); Bales (2010) and Suibh & O'Neill (2016).

Training and education would improve nurses' confidence and knowledge base but competence may decline if there is a lack of frequent exposure to stoma care. Ideally, ostomy care education should start at undergraduate level (Lee *et al.* 2008) which will give students more confidence, knowledge and experience as they transition from student to nurse. (Zimnicki and Pieper 2018). However, nurses will still need ongoing exposure to stoma care to maintain the knowledge and skills required and access to a CNS may not always be possible. Ensuring accessible online resources in the ward situation could help e.g. a series of short video clips demonstrating different aspects of evidence based stoma care. Shadowing a CNS for stoma care could also help, although again resource issues may be a barrier to this.

Every hospital should provide evidence based stoma care policies, documentation and resources such as information booklets to guide stoma care in the ward setting. The lack of information, training by professional staff and other resources can cause nurses to feel helpless (Nieves *et al.* 2017).

Suggestions for future research:

Online training modules covering basic principles of stoma care that are easily accessible at ward level could develop nurses' knowledge base on stoma care. Evaluative research on the effectiveness of these modules could then be performed to ensure that the knowledge and skill needs of nurses are being met.

Auditing stoma care regularly on the ward area will also help to ensure quality care is provided and can illustrate the impact of continuing education on care provision.

An area that has been neglected are patients' perceptions and experiences of stoma care and this would benefit from investigation to highlight the strengths of the current nursing stoma services and the deficits.

It is important for nurses to have knowledge and skills of stoma care and particularly so in the absence of specialised stoma care nurses within the service. The need for updates and evidence based guidelines to support stoma care is the very minimum that nurses require and ideally clinical exposure to stoma care to provide safe and effective care. A clear stoma care framework

is needed for delivering good quality care which identifies best practice, referral pathways and appropriate resources for staff infrequently required to provide stoma care (ISCCNA 2016). Ostomy formation is considered to be a life changing surgery for patients with a multiplicity of bowel diseases and therefore nurses need knowledge to inform their delivery of safe and quality care to ostomy patients. Adjusting to life with an ostomy is challenging physically, psychologically and sociologically and supportive based nursing care underpinned by knowledge and skills are essential to help patients with that transition at every stage of their recovery.

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Appendix 1

21 The Dales,
Moylough,
Co Galway

April 20th, 2020

Dear Editor,

I would be very grateful if you would consider the attached paper entitled

“An examination of nurses’ knowledge of ostomy care in the acute care setting”

for publication in the Gastroenterology Nursing Journal.

I wrote this article as part of MSc. of Nursing. I currently work as a clinical nurse specialist in stoma care in Galway University Hospital, Ireland.

Looking forward to your critique and please do not hesitate to contact me if you have any queries.

Yours sincerely,

Aisling Dunne