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Nurse activity to prevent and support those with parastomal hernia

ABSTRACT

Parastomal hernia (PSH) is a common stoma complication amongst people with a stoma and represents considerable challenge. This paper reviews research evidence to establish how nurses might help to prevent PSH and improve understanding. However, evidence was lacking in this area and found to be of low quality. Studies focused on adults with a stoma who developed a PSH identified that:

- An ostomist's waist circumference > 100cm can be a major contributing factor in developing a PSH.
- The incidence of PSH can be reduced by a non-invasive, nurse-led prevention programme
- Pre-operative stoma-siting and education may play a part in preventing PSH.
- PSH presents significant physical, psychological and social morbidities for the ostomist, and as a result, many adopt coping strategies rather than seeking professional help.

Further research is needed to strengthen the evidence base for care of those with parastomal hernia and elucidate professional opinion.

Key Words: Parastomal Hernia, Nurse, Ostomist, Quality of Life

Introduction

Herlufsen et al. (2006) estimates that there were 102,000 ostomists are living in the United Kingdom (UK), with approximately 10,000 permanent new stomas each year (Coloplast, 2009). When a stoma is formed, abdominal muscle weakness may result, with potential associated complications (Franz, 2008). PSH is the most common late stoma complication amongst permanent ostomists, representing a considerable challenge to ostomists, health care professionals, and NHS resources (Hotouras,

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Murphy, Thaha and Chan, 2013). Rolstad and Boarini (1996) define PSH as “a bulging of the peristomal skin, indicating the passage of one or more loops of bowel through a fascial defect around the stoma and into the subcutaneous tissue” (p.24). (Figure 1.1.). The incidence of PSH in the UK is estimated at around 30% of all ostomists (temporary and permanent) and found to be more common in colostomates (McGrath, Porrett and Heyman, 2006), although international incidence of parastomal hernias are difficult to estimate, as definitions vary worldwide (Salvadarena, 2008). The true aetiology of PSH development is unknown as predisposing factors associated with PSH are mostly based on expert opinions rather than scientific evidence (Pilgrim, McIntyre and Bailey, 2010).

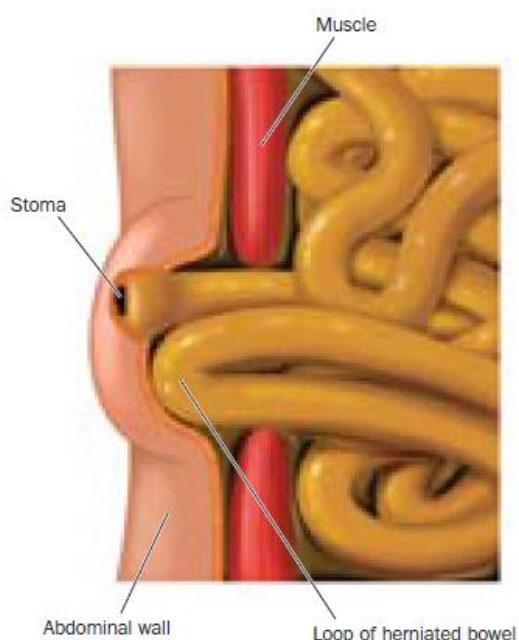


Figure 1.1. Parastomal Hernia Formation.



Figure 1.2. A Parastomal Hernia.

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Aside from the unsightly swelling caused by PSH (Figure 1.2.) there is also a risk of intestinal obstruction when the bowel twists or kinks causing sharp, colicky pain (Burch, 2004). PSHs are only reversible through surgical intervention, but since the recurrence rate is over 50%, surgery is not always an option (Israelsson, 2005). In most cases, nurses teach the ostomist to manage their condition with a hernia support garment, to help prevent the PSH becoming larger (Williams, 2011).

Methods.

To identify all the evidence a comprehensive literature search was undertaken in July 2015 using CINAHL Plus, PUBMED and the Cochrane Database of Systematic Reviews. Table 1 shows key words used in the search, identifying any synonyms, plurals, phrases and spellings (Bettany-Saltikov, 2012).

Table 1. Identification of Key Words.

Components	Key Words
Parastomal Hernia (Stoma Patient)	Parastomal hernia Parastomal herniation Stomal hernia Stomal herniation Colostomy and hernia Ileostomy and hernia Urostomy/ileal conduit and hernia
Nursing action to Prevent PSH	Prevention Education
How PSHs Affect Ostomists' Lives	Management Quality of Life

Truncation was utilised to expand all forms of each key word and Boolean operators (OR, AND) were used to aid search precision (Timmins and McCabe, 2005). Limits

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for the electronic search were set to Adult 18+, English Language and a time limit of 10 years. Reference lists were inspected for additional relevant publications (Bettany-Saltikov (2012), although none met the inclusion criteria. Secondary sources were retrieved and used to support the literature review.

Findings.

Initial searches identified research was mostly focussed on surgical prevention techniques, but a lack of primary research-related to nursing and PSH prevention.

Seven studies met the inclusion / exclusion criteria (Table 2.)

Table 2. Inclusion and Exclusion Criteria.

Inclusion Criteria (n=7)
Primary Research
Adults with a Colostomy or Ileostomy or Urostomy/Ileal Conduit
Nursing Related Parastomal Hernia Prevention Strategies
Patients' Quality of Life Living with a Parastomal Hernia
Exclusion Criteria (n=20)
Surgical Techniques to Prevent Parastomal Hernias (n=15)
Parastomal Hernia Implications and Management with No Focus on Study Topic (n=5)
Non-English Language (Pre search)
Research more than 10 years old (Pre search)

Studies Included in this Review

Studies included in the review are shown in Table 3 (four quantitative, two mixed methods and one qualitative study).

Table 3 Included Studies

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<p>Cowin, C. & Redmond, C. (2012)</p> <p>Living with a parastomal hernia. <i>Gastrointestinal Nursing</i>, 10(1),16-24.</p> <p style="text-align: right;">Country: UK</p>
<p>De Raet, J., Delvaux, G., Haentjens, P. & Van Nieuwenhove, Y. (2008)</p> <p>Waist Circumference is an Independent Risk Factor for the Development of Parastomal Hernia After Permanent Colostomy. <i>Diseases of the Colon and Rectum</i>, 51(12), 1806-1809.</p> <p style="text-align: right;">Country: Belgium</p>
<p>Kald, A., Juul, K.N., Hjortsvang, H. & Sjødahl, R.I. (2008)</p> <p>Quality of life is impaired in patients with peristomal bulging of a sigmoid colostomy. <i>Scandinavian Journal of Gastroenterology</i>, 43(5), 627-633.</p> <p style="text-align: right;">Country: Sweden</p>
<p>North, J. (2014).</p> <p>Early intervention, parastomal hernia and quality of life: a research study <i>British Journal of Nursing</i>, 23, supplement 5, S14-18</p> <p style="text-align: right;">Country: UK</p>

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<p>Person, B., Ifargan, R., Lachter, J., Duek, S.D., Kluger, Y. & Assalia, A. (2012)</p> <p>The Impact of Preoperative Stoma Site Marking on the Incidence of Complications, Quality of Life, and Patient's Independence. <i>Diseases of the Colon & Rectum</i>, 55(7) 773-777.</p> <p style="text-align: right;">Country: Israel</p>
<p>Thompson, M.J. & Trainor, B. (2005)</p> <p>The incidence of parastomal hernia before and after a prevention programme. <i>Gastrointestinal Nursing</i>, 3(2), 23-27.</p> <p style="text-align: right;">Country: UK</p>
<p>Thompson, M.J. & Trainor, B. (2007)</p> <p>Prevention of parastomal hernia: a comparison of results 3 years on. <i>Gastrointestinal Nursing</i>, 5(3), 22-28.</p> <p>Follow-up study to ascertain the reliability of the non-invasive PSH Prevention programme carried out by Thompson, M.J. & Trainor, B. (2005)</p> <p style="text-align: right;">Country: UK</p>

Systematic Assessment of Methodological Quality

Primary research retrieved for literature reviews should be carefully assessed for quality (Glenny and Gibson, 2007), to allow judgement on the limitations, merits and significance of the reported findings (Polit and Beck, 2006). Papers were scored using Duffy's (1985) research appraisal checklist, rather than quality assessment tools from organisations such as CASP, NICE or Cochrane. This approach allowed consistent comparison across quantitative and qualitative studies by giving an overall quality score to each study (51 different criteria were scored on a scale of 1-6).

Minimisation of Subjectivity

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To reduce the risk of bias in quality assessment, two studies were randomly selected and independently evaluated by a blinded reviewer which established that there was good agreement, demonstrating maximum rigor.

The emerging themes from the findings of the studies have been organised to address the review questions, and the key components investigated were as follows:

Nursing strategies to prevent PSH

- Weight management
- Non-invasive prevention programme
- Pre-operative stoma site marking and education

PSH ostomists' experiences

- Physical cost
- Psychological and social costs

Nursing Strategies to Prevent PSH

Weight Management

McGrath et al. (2006) argued that obese stoma patients have raised intra-abdominal pressure which makes the abdominal wall prone to stretch, enlarging the muscular opening, and increasing risk of PSH. De Raet, Delvaux, Haentjens and Van Nieuwenhove, (2008) showed that waist circumference was an independent risk factor ($p=0.011$) in developing a PSH and that ostomists with a waist circumference greater than 100cm have a 75% probability of developing a PSH. The De Raet et al.

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(2008) study strongly recommends that healthcare professionals should be discussing how to achieve an optimal Body Mass Index (BMI) of between 20-25kg/m² with ostomists, as this has the potential to reduce PSH rates. The limitations to the De Raet et al. (2008) study were that it sampled only 41 subjects who all underwent elective permanent sigmoid colostomy. Nurses must exercise caution in interpreting these findings, as other ostomy types were not included.

The De Raet et al (2008) study indicates that ostomists may need to receive advice on healthy weight reduction. The study was conducted in Belgium, but the UK is Europe's leader in obesity rates and also has more inhabitants (The National Health Service Information Centre, 2012). There is likely to be an increased risk of PSH for UK ostomists when compared with the rates in the De Raet et al Study.

Exercise Advice

There has been scientific proof for many decades that regular exercise has numerous health benefits including maintaining a healthy weight (Morris, Kagan and Pattison, 1966). Ideally weight reduction programmes and exercise regimes to minimise PSH risk would be given pre-operatively, but it is often performed as an emergency with no time to consider anticipatory weight loss. Therefore, post-operative education reinforced with patient information booklets near to discharge seems fundamental. Varma (2009) suggests ostomists should not be prevented from doing physical exercise and that physical activities should be encouraged.

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Thompson and Trainor (2005; 2007) performed a quantitative study, examining exercise within a PSH prevention programme in the UK. After establishing PSH incidence, a prevention programme was introduced and PSH rates were collected for 2 years. The intervention involved healthy lifestyle advice, advice on abstinence from heavy lifting for 3 months, introduction of abdominal exercises from 3 months post operatively and provision of a support garment.

A statically significant reduction in the incidence of PSH was demonstrated following the introduction of the prevention programme (28% developed PSH before intervention, dropping to 14% post intervention, ($p \leq 0.025$). However in year three, the PSH incidence had risen to 17%. On closer examination, the researchers found that this was related to non-adherence to the programme, and were able to demonstrate a continued significant reduction in PSH rates for those who followed advice ($p \leq 0.01$). Thompson and Trainor (2005; 2007) also found that increased age led to increased risk of PSH, so nurses should seek to ensure that there is discussion about the benefits of exercise across the whole lifespan.

The importance of patient- professional concordance in prevention programmes is also confirmed by the North (2014) study, who found considerable reduction in PSH rates between those who were fully concordant with the suggested exercise programme (1%) and those who weren't (15%). This study differed from Thompson and Trainor (2005; 2007) as exercises and daily wearing of support garments began immediately post operatively. There were also 3, 6 and 12 monthly support visits

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offered to improve concordance. Although North (2014) is largely descriptive with no hypothesis testing, when taken together with the previous studies, research evidence is beginning to indicate that exercise is a key issue for nurses who work with stoma patients. Further research is needed to investigate how programme concordance might be encouraged, but is likely to include follow-up appointments or telemedicine.

Ostomists are usually advised by experts to wait three months post-operatively before considering strenuous exercise or heavy lifting, with the advice being “if it hurts, stop” (Burch and Sica, 2005; Varma, 2009). However, Thompson and Trainor (2005; 2007) examined the timing of the PSH development and found 58% of ostomists developed a PSH in the first six months. The prevention programme in North (2014) indicates potential for immediate post operative exercise when combined with garment support. North (2014) asserts that brand of garment support chosen by the ostomist had no effect on outcome, although expert opinion indicates type of garment is important to achieve optimum outcomes (Readding, 2014). Future research should investigate the role of exercise, types of garment support and patient choice in more detail.

Implementation of a non-invasive prevention programme for prevention of PSH has resource implications, with the initial resource outlay for the ostomies, the SCN and organisational constraints. A later section of this article will examine whether preventive programmes are feasible.

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Pre-operative Stoma Siting and Education

The word “siting” means to mark the skin in an ideal position (Wright and Burch, 2008). Person et al. (2012) performed a quantitative study evaluated the impact of pre-operative stoma siting and education on ostomists’ quality of life (QOL), independence and complication rates (which included PSH incidence). Prior to surgery, 52 patients were sited by a SCN and 53 patients not sited. The lack of information about sampling, the lack of clarity about what pre-operative “education” was involved and the lack of information about blinding in the study threatens the reliability and validity of the study (Polit and Beck, 2010). However, all patients received the same post-operative care by a single SCN, and used a validated stoma QOL questionnaire to compare how the pre-operative stoma siting impacted on patients’ wellbeing. The researchers found QOL of the sited group was significantly better than the not-sited group ($p < 0.05$) particularly in their confidence and independence. The incidence in PSH of the stoma-sited group was 3.8% and significantly lower ($p < 0.01$) than 24.5% in the not-sited group, suggesting a link between PSH and QOL. However, Thompson and Trainor (2005) found that pre-operative stoma siting has no effect on the development of a PSH casting doubt on this link which will be explored in more detail later in this article.

Siting of the stoma is usually performed by a SCN, who has gained theoretical knowledge from a specialised training course and competency though supervised practice (World Council of Enterostomal Therapists UK, 2010). SCNs spend time with patients, assessing each patient’s physical status, predisposing factors and

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lifestyle issues. They give information, proactively listen to their patient's concerns and offer reassurance (Black, 2000). It is possible that it is the combination of education on weight management, tailored garment provision according to need, exercise and pre-operative siting that will best serve patients until further evidence is available. Other factors, including patients' predisposing health conditions, their physical and psychological state prior to surgery, surgical techniques, type of operation and type of stoma formed may also be influential and similarly require investigation.

Furthermore, the UK Enhanced Recovery Programme (ERP), recommends pre-operative stoma care education (UK Department of Health, 2010) and Rutledge, Thompson and Boyd-Carson (2003) argue that all patients should be sited prior to undergoing stoma formation. However, pre-operative PSH prevention strategies are often a logistical challenge due to the emergency nature of many procedures, poor quality supporting evidence and a lack of patient accessibility to stoma clinics and specialist care (Herlufsen et al.,2006).

PSH Ostomists' Experiences

Physical Cost

Cowin and Redmond (2012) used a mixed methods, self-completion questionnaire to survey 1876 ostomists living with a PSH in the UK. They found that leakage (66%) causing odour was the main management problem reported. There were noticeably increased levels of sore (14%) and thinning (31%) skin since development of a PSH and on average the stoma size increased by 7.5cm.

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Cowin and Redmond's (2012) findings have shown that 59% of ostomists tended to rely on their own coping strategies and never or rarely sought professional help to manage their problems. They found the most popular management techniques favoured was to "be careful, avoid heavy lifting, don't overdo it, reduce food portion size and avoid windy foods". Nearly two thirds of participants said they were experiencing problems managing their stoma, yet only 17% sought professional support and guidance more than occasionally. This is an area of concern for further research, it may be that ostomists believe that they know best as an expert patient, prefer to seek help from ostomy support groups/websites, are too embarrassed to seek professional help or scarce SCN time deters self referral.

The Cowin and Redmond study may not truly represent of all ostomists living with PSH because findings are only based on patients who have been formally diagnosed and have a prescription for a hernia support garment from a Salts home delivery service, and also because the response rate (17%) was poor. A study by Williams et al. (2010) may partly explain this. They found that many ostomists lacked the ability to detect stoma problems: whilst over half of participants exhibited PSH, only a quarter were aware of it. Taken together, research indicates that regular review by a SCN may help to identify those living with an undiagnosed PSH, and that ongoing patient education and regular follow-ups are essential. The work of Thompson and Trainor (2005;2007) indicate that this is particularly important in the first 6 months.

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Expert observation suggests a PSH creates an irregular 'bulged' surface and disfigure the position of the stoma so that an ostomist may experience difficulties with pouch flange adherence (Burch and Sica, 2005). Expert opinion also suggests that leakage and sore skin is usually caused by ill-fitting or inappropriate usage of stoma appliances. (Black, 2009). These opinions about PSH remain unproven by research evidence within this review, which shows both areas require further investigation.

Ostomists reported discomfort with their stoma, with 63% expressed a "pulling" or "dragging" feeling, possibly caused by the weight of the hernia. A hernia support garment is thought to alleviate this problem, reducing symptoms and PSH size which makes it less visible through clothing (Williams, 2011; Readding, 2014). However, Cowin and Redmond (2012) showed that although all respondents had ordered a PSH support garment, only 45% regularly wore it, and just 27% thought that wearing a support garment was the best way to manage their stoma. Expert opinions suggest the individual must be educated, measured and fitted correctly prior to use, otherwise non-concordance will occur (Thompson, 2009; Williams et al., 2010). However, Black (2009) states SCNs have no formal training in PSH management and expertise is simply gained from job experience and peers. Further research is therefore recommended to examine assessment practices of SCNs in relation to support garments, the evidence to support choice of appropriate garment to ensure cost effective practices, and reasons for non-concordance.

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Psychological and Social Costs

Kald, Juul, Hjortsvang and Sjødahl (2008) performed a Swedish study consisting of two self-completion QOL questionnaires. Seventy permanent sigmoid colostomists were clinically examined by the researchers to diagnose whether a peristomal (parastomal) bulging was present and then selected into comparison groups; No Bulge = 24 (34.3%) and Bulge= 46 (65.7%). The results identified a statistically significant impaired QOL ($p=0.047$) for the Bulge group. North (2014) also found consistently lower QOL scores for ostomists with PSH when compared with those without PSH. Although all ostomist's QOL scores increased as time progressed, this difference persisted throughout the first year.

Kald et al (2008) found a major stressor for participants was "sleeping badly at night and feeling tired during the day". These ostomists were constantly "worried about leakage, smell and noises from their stoma". Cowin and Redmond's (2012) study showed that leakage for those with PSH occurs across day and night time with similar frequency. Erwin-Toth, Thompson and Davis (2012) demonstrated that for all ostomists, leakage had the most impact on QOL scores. Experts think that the physical burden and awkwardness of the peristomal bulging exacerbates fatigue, and that worry about night-time leakage inhibits sleep (Lowther, 2014).

Kald et al. (2008) found body image to be of great concern for PSH patients as the bulge further limited the choice of clothing and created additional difficulties in stoma concealment. Ostomists' social activities had reduced following development of the

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bulge, particularly with difficulties in staying away from home overnight and anxieties about the proximity of the toilet. Expert opinion suggests nurses play a pivotal role in alleviating these concerns by finding a suitable stoma appliance, teaching and supporting ostomists to enable them to live with a PSH by discussing the options and help available (Black, 2009).

Kald et al (2008) do not describe their methods well, since researchers did not clarify definitions of the “peristomal bulges”, or the duration of the study. Ostomists who lived more than one hour away from hospital and those who were living in institutions were also excluded from the study which makes them unrepresentative of all ostomists.

Quality of Research

Duffy’s (1985) research appraisal checklist was used to systematically assess the methodological quality of the included seven primary research articles. All the reviewed articles had limitations in their application and were graded as average quality. The overall body of evidence uncovered, suggests that research methodology was less than ideal. More robust UK-related nursing research into prevention of PSH and the impact of PSH on ostomists’ lives is vital to ensure the best evidence-based practice is delivered.

DISCUSSION.

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Financial costs of PSH are extremely difficult to estimate and compare (Thompson, 2009), since there are a variety of healthcare providers, surgical techniques, non-invasive approaches and patient outcomes. Factors influencing cost would include surgery and anaesthetic practices; provision of stoma accessories and garment support; outcomes associated with different approaches to care; costs of patient education, nursing time and clinic facilities; and finally, hidden financial costs for patients. Thompson (2009) and Readding (2014) suggest that garment support, education and lifestyle change may be a cost effective PSH prevention strategy and alternative to surgical repair. However, PSH management can be made more cost-effective when targeted to reflect the relative risk of PSH for particular patient groups (Figel et al.,2012). Future cost-benefit analysis studies would comprehensively identify costs for surgical and non-surgical approaches and associate these costs with outcomes, so that services can be redesigned around patient need.

IMPLICATIONS FOR NURSING PRACTICE.

Three main nursing PSH prevention strategies have been identified from performing this review. The first nurse strategy is to ensure ostomists are informed and understand that maintaining an optimal BMI of 20-25kg/m² could drastically reduce their chance of developing a PSH (De Raet et al.,2008). Secondly, nurses should discuss healthy eating, information about heavy lifting, introduce them to abdominal exercise after 3 months and share healthy lifestyle advice with their stoma patients (Thompson and Trainor, 2005; 2007). Finally, prior to stoma surgery, nurses should

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give information and educate the patient about stoma management and PSH risk (Person et al.,2012).

CONCLUSION

The literature review process has exposed that SCN nursing literature is steeped in tradition with an abundance of articles referencing expert opinions, rather than robust evidence-based research. The predominant findings from research are:

- An ostomist's waist circumference plays a pivotal factor in the development of a PSH.
- A non-invasive, nurse-led prevention programme has shown a statistical significance in initially reducing the incidence of PSH.
- Evidence suggests that pre-operative stoma-siting, and education about exercise and diet may play a part in preventing PSH.
- PSH presents significant physical, psychological and social morbidities for the ostomist, and many adopt self-management / coping strategies rather than seeking professional help.

More research is needed to inform PSH prevention and management, and achieve good patient outcomes. From a nurse's perspective, PSH prevention is better than cure.

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