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European
Wound, Ostomy
and Continence
Supplement

Digitalisation and stoma apps



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Stoma surgery has a significant impact on patients' quality of life. Patients living with a stoma have to cope with a new situation, which can cause various physical and psychosocial challenges. A stoma patient is initially treated by a stoma specialist in hospital and later at home. The stoma therapist is responsible for teaching and training stoma patients to self-care. Further follow-up support is important to deal with any stoma-related problems that may arise. In such cases, in addition to the individual care provided by the stoma therapist, mobile apps can offer welcome help and advice.

In their research into the impact of the Stoma App mobile application, van der Storm et al (2024) found that the technology helped to improve the quality of life of stoma patients. In the study, a double-blind, randomised controlled trial was conducted between March 2021 and April 2023. They included patients aged over 18 years undergoing ileostomy or colostomy surgery, in possession of a compatible smartphone. The intervention group ($n=96$ patients) received the full version of the app containing personalised and timed guidance, peer support and generic (non-personalised) stoma-related information. The control group ($n=112$ patients) received a restricted version with only generic information. Primary outcomes were related to stoma quality of life. Secondary outcomes included psychological adaptation, complications, re-admittance, reoperations and length of hospital stay (van der Storm, et al, 2024). The intervention group reported a significant 3.1-point improvement in stoma-related quality of life 1 month postoperatively ($p=0.038$). No significant improvements could be retrieved of the intervention group. van der Storm et al (2024) concluded by recommending that the Stoma App—which is freely available software that qualifies as a medical device—be made standardised in stoma care pathways for the benefits of both patients and healthcare providers. Kim et al (2018) highlighted the benefit of providing educational information via mHealth software, which can have a positive impact on patient self-care.

However, stoma education, treatment and care cannot be fully digitised in today's healthcare landscape. Lack of access to appropriate digital applications is often the first barrier in the way of digital communication. Stoma patients tend to be an older population that still has problems with digital literacy. Emotional considerations are the next barrier. Finally, the use of digital technologies should not lead to alienation in the relationship between the stoma patient and stomatherapist or GP. The Stoma App should only be an additional help for stoma patients to find information, guidance and solutions for specific stoma problems.

GN

Renata Batas, Consultant Editor

Kim BY, Park KJ, Ryoo SB et al. Effects of a mobile educational program for colorectal cancer patients undergoing the enhanced recovery after surgery. *Open Nurs J* 2018;12:142–154. <https://doi.org/10.2174/1874434601812010142>

van der Storm SL, Consten ECJ, Govaert MJPM et al. Better stoma care using the Stoma App: does it help? A first randomized double-blind clinical trial on the effect of mobile healthcare on quality of life in stoma patients. *Surg Endosc*. 2024;38(3):1442-1453. <https://doi.org/10.1007/s00464-023-10593-x>



Clinical digest

A brief overview of recently published articles on wound, ostomy and continence care

Renata Batas, Enterostomal Therapist at Community Health Centre Ljubljana, Slovenia

Parastomal hernia following ileal conduit incidence, risk factors, and health-related quality of life

Che X, Huang H, Wang W et al. Parastomal hernia following ileal conduit incidence, risk factors, and health-related quality of life. *J Wound Ostomy Continence Nurs.* 2024;51(2):126-131. <https://doi.org/10.1097/won.0000000000001063>

Ileal conduit is performed after the bladder is removed as a result of malignancies and benign diseases. It is the most common urinary diversion because of its reproducible technique and acceptable levels of postoperative complications. Many patients develop stoma and peristomal complications. The most frequent occurring stoma complication is parastomal hernia (PH). It is typically asymptomatic; a few patients will experience abdominal pain, inability to maintain a pouch seal and bowel obstruction, and may require surgical intervention. Recent studies have reported that incidence of PH after radical cystectomy and ileal conduit was between 20–35%. Evidence on risk factors for PH in some studies noted that female gender, high body mass index (BMI), low preoperative albumin level and previous laparotomy were associated with the development of PH.

The aim of the study, made at Peking University First Hospital (Beijing, China), was to measure the incidence of PH after radical cystectomy and ileal conduit. Secondary aims were the identification of risk factors for PH and to compare the health-related quality of life (QOL) between patients with and without PH. The study sample comprised of 219 patients who underwent radical cystectomy and ileal conduit for urothelial cancer between February 2014 and December 2018. The study used a retrospective review of

medical records combined with cross-sectional administration of the QOL instrument and telephone follow-up. Participants were also asked to complete the traditional Chinese language version of the City of Hope Quality of Life-Ostomy Questionnaire (C-COH). Multiple linear regression analysis was used to identify the effect of PH on C-COH scores. Logistic regression analysis was used to identify risk factors for PH development.

The survey results showed that at a median follow-up of 34 months (Inpatient Quality Reporting (IQR)=21–48), 43 of 219 (19.63%) patients had developed a PH. A BMI indicating overweight (OR=3.548; 95% confidence interval (CI) 1.562-8.061; $P=0.002$), a prior history of hernia (OR=5.147; 95% CI 1.195-22.159; $P=0.028$), and chronic high abdominal pressure postdischarge (CHAP-pd) (OR=3.197; 95% CI, 1.445-7.075; $P=0.004$) were predictors of PH after operation. There was no significant difference between C-COH scores of patients with or without PH. No significant differences were found when participants with PH were compared to those without PH on 4 factors of the C-COH: physical scores ($\beta=0.347$, $P=0.110$), psychological scores ($\beta=0.316$, $P=0.070$), spiritual scores ($\beta=-0.125$, $P=0.714$), and social scores ($\beta=0.054$, $P=0.833$).

Findings from this study suggest that a BMI indicating overweight or obesity, hernia history and CHAP-pd are risk factors for PH. No significant differences in QOL were found when patients with PH were compared to those without PH.

The limitation of the study was that changes in QOL in persons with a urostomy and PH were not measured at

different points in time. This may have led to participant selection bias and excluded deceased patients. Moreover, not all patients received CT or ultrasound examination, which may have led to underestimating the incidence of PH.

Effectiveness of pelvic floor muscle training for patients following low anterior resection: a systematic review and meta-analysis

Kim YM, Oh EG. Effectiveness of pelvic floor muscle training for patients following low anterior resection: a systematic review and meta-analysis. *J Wound Ostomy Continence Nurs.* 2023;50(2):142-150. <https://doi.org/10.1097/won.0000000000000958>

Colorectal cancer is the third most prevalent and second most common cause of cancer death. Abdominoperineal resection with permanent end colostomy is less common because of advances in surgical and (neo) adjuvant chemotherapy. An alternative intervention, low anterior resection (LAR) with total mesorectal excision has become the standard surgery for patients with mid to low rectal cancer.

Patients undergoing LAR experience changes in bowel function with a cluster of symptoms (faecal incontinence, rectal urgency, frequent or fragmented intestinal motility, difficulty evacuating the bowel and increased intestinal gas) referred to as low anterior resection syndrome (LARS). The reported prevalence rates vary, between 34–80% of patients exhibit LARS. In addition to troublesome bowel elimination symptoms, LARS impairs health-related quality of life (HRQOL) which include also physical, emotional, role and social functions. While pelvic floor muscle training (PFMT) is considered a first-line option for relieving bowel dysfunction, there is limited evidence to support the effectiveness of this intervention in patients with LARS.

The purpose of this systematic review was to identify the effects of PFMT on bowel function and HRQOL among patients who have undergone low anterior resection. Out of the 453 articles retrieved, 36 were read in full and 12 were included in the systematic review. Pooled findings from five studies were selected for meta-analysis.

Analysis revealed that PFMT reduced bowel dysfunction (mean difference (MD) -2.39, 95% confidence interval (CI) -3.79– -0.99) and improved several domains of health-related quality of life: lifestyle (MD 0.49, 95% CI 0.15–0.82), coping (MD 0.36, 95% CI 0.04–0.67), depression (MD 0.46, 95% CI 0.23–0.70), and embarrassment (MD 0.24, 95% CI 0.01–0.46).

Findings suggested PFMT is effective for improving bowel function and enhancing multiple domains of health-related quality of life after low anterior resection. Further well-designed studies are required to confirm conclusions and provide stronger evidence for the effects of this intervention.

Patient perceptions and experiences with maggot debridement therapy for managing chronic wounds

Babiarczyk B, Tobiczek J. Patient perceptions and experiences with maggot debridement therapy for managing chronic wounds. *J Wound Ostomy Continence Nurs.* 2024;51(3):180–184. <https://doi.org/10.1097/won.0000000000001067>

People with multiple comorbid conditions may develop chronic wounds that remain open for several months. Chronic wounds increase the physical, psychosocial and financial burden on patients and the healthcare system. To reduce this burden and improve the healing of chronic wounds, clinicians have explored alternatives to traditional treatments that can shorten healing times and reduce treatment costs. One possible alternative is maggot debridement therapy (MDT). Maggot debridement therapy is a method for cleaning, decontaminating and supporting the healing process of chronic wounds that are not making progress toward healing due to necrosis or infection. It is the only approach that covers all 4 stages of the TIME approach.

The aim of this descriptive, cross-sectional study was to describe patients' experience and satisfaction with MDT for wounds that are difficult to heal.

The study was made in sample comprised of 60 participants, 60% were male ($n=36$). Their mean age was 62.9 (SD=20) years. Almost half of participants had lower extremity wounds ($n=26$; 43.3%), diabetic

foot ulcers ($n=18$; 30%), and pressure injuries ($n=9$; 15%). Most received maggot therapy via biobags ($n=36$; 60%).

Participants completed a questionnaire designed for the purpose of the study that queried demographic and pertinent clinical characteristics, current health status (including current topical therapies) and duration of their chronic wound. A total of nine items queried emotional responses prior to MDT, the amount and method of the maggot therapy, discomfort experienced during therapy and sources of information regarding the treatment.

The results of the study were that emotional responses before starting MDT included disgust ($n=30$, 50%), anxiety ($n=26$, 43.3%), doubts about its effectiveness ($n=20$, 33.3%) and disbelief ($n=11$, 18.3%). Approximately one-third of participants reported feelings of biting, itching and fear of the maggots. Despite these feelings, a majority ($n=38$, 63.3%) indicated that they were pleased with treatment outcome and willing to undergo additional MDT if needed. Although most participants with nonhealing chronic wounds reported negative feelings associated with MDT, more than half of them indicated that they were satisfied with the outcome of the treatment and were willing to repeat the treatment if indicated.

Complications and healthcare costs associated with the first year following colostomy and ileostomy formation: a retrospective study

Brady RRW, Scott J, Grieveson S et al. Complications and healthcare costs associated with the first year following colostomy and ileostomy formation: a retrospective study. *J Wound Ostomy Continence Nurs.* 2023;50(6):475–483

In the UK, approximately 6400 colostomy and 9000 ileostomy surgeries are carried out annually. Postsurgical complications are common in these patients; in a literature review of 18 randomised controlled trials (RCTs), the researchers reported the rates of ostomy-site complications ranged from 2.9–81.1%. Complications have been found to occur most frequently 2 weeks after

discharge, with longer-term follow-up over 1–2 years, indicating ostomy-related complication rates of up to 82%.

The single-center retrospective audit study sample comprised of 200 patients who underwent surgery leading to ileostomy or colostomy at a large English NHS Trust. The aim of this study was to evaluate clinical and economic outcomes during the first year following ostomy formation.

Data were collected over a 12-month posts-operatively period on clinical complications, medicine prescriptions and interactions with the NHS. Results were compared with the nearest NHS unit cost to determine the average cost per patient.

The study findings reported that most common ostomy-related surgical site complications were high output (35.0%; $n=70$), followed by moderate/severe peristomal skin complications (24.5%; $n=49$) and bleeding (23.5%; $n=47$). Ostomy management-related complications included general difficulties with ostomy management (50.0%; $n=100$) and leakage-related mild peristomal skin issues (48.5%; $n=97$). Clinical complication rates were highest in the first quarter following ostomy formation, except parastomal hernia, which increased in incidence over time. It was found that ileostomy patients more frequently experienced high output, acute renal failure and ostomy management-related complications, and had increased length of inpatient admission.

Healthcare resource use was high in both groups, with a median of 13 inpatient admission days and 12 outpatient contacts overall within the first year. Mean cost per patient was £20 444.60 (US \$26 018.41); 90.5% of these costs were attributed to ostomy-related factors.

Stoma patients are expected to experience at least one clinical complication and have multiple interactions with the NHS. While many complications are found to be more common in patients with ileostomies, both groups have significant costs associated with treatment and recovery in the first year after surgery.



ECET plans its 16th conference in Barcelona

Gabriele Kroboth details some of the ECET's recent work and plans for its upcoming conference.

Gabriele Kroboth, ECET President

The European Council of Enterostomal Therapy (ECET) Board is working intensively on preparations for the 16th ECET Conference in Barcelona. As announced in the last issue, this conference will take place together with the European Wound Management Association's conference and held in cooperation with the Spanish nursing association: Sociedad Espanola de Entermeria Experta an Estomatherapia.

The first physical meeting between the ECET Board and the President of the Sociedad Espanola de Entermeria Experta an Estomatherapia also took place in Glasgow. The meeting was extremely constructive, which will certainly be reflected in the planning of the scientific programme for Barcelona.

The first draft of the scientific programme will be published on the ECET homepage (ecet-stomacare.eu) and the congress homepage by the end of October. Several interesting topics and outstanding keynote speakers will be announced. We expect abstracts and posters from all over Europe.

There are plans to produce a European-wide study. They want to investigate the influence of preoperative stoma marking on stoma and peristomal complications. This study will be conducted as a multi-centre retrospective study, in which postoperative complication rates of patients with and without preoperative



Left-right: Ayşe Silanur Demir, Havanur Kılıç and Professor Ayişe Karadağ

stoma marking will be compared. The importance of stoma marking in practice will be demonstrated.

An invitation to participate in this study will be sent to many colleagues by the ECET board. This would be the first large European data collection study of its kind. We would like to take this opportunity to thank Professor Ayişe Karadağ and Havanur Kılıç for the transnational study.

Workshops are also being planned to take place during the ECET conference. These will be workshops for small groups of a maximum of 35 participants, as practical exercises are also planned, such as workshops on fistulas and convex restorations.

The ECET Board also attended the WCET conference in Glasgow. This visit was an opportunity to meet colleagues

The authors

The authors



Left-right: Oliver Toft Christophersen; Yente Dubbeldam (CAP Partner); Renata Batas, Vice president ECET; Margarete Wieczorek, Secretary ECET with the first announcement of ECET 2025 conference. ECET joins forces with the European Wound Management Association and GNEAUPP for its 2025 conference, which will be held from 26–28 March in Barcelona, Spain.

and exchange ideas, establish new relationships with exhibitors, discuss possible joint projects and promote the ECET conference in Barcelona.

Discussions with members of the WCET board were friendly and optimistic,

and there was a great exchange of ideas on common topics. ECET made it clear that, while WCET has to take care of the whole world, ECET’s focus remains fixed on Europe. Specifically, ECET would like to work on clear priorities related

to European issues in the coming years. These efforts will developed further through votes on upcoming projects at annual conferences, where ideas will be shared and discussed. We hope to see you at one of them!

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Comprehensive care management for people with enteral fistulas

Margarete Wieczorek discusses the recent efforts by the German Stoma, Continence and Wound Association to design a new training programme for GI nurses working in holistic care management.

Margarete Wieczorek

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The therapy and care of patients with enteral fistulas and wound healing problems are challenging and complex activities. Those patients need the support of specially qualified nurses. This comes with many associated challenges, as nursing staff have to manage different care situations in acute clinics, rehabilitation, outpatient and inpatient care. This article presents a new training programme for nurses in holistic care management for people with enteral fistulas, which has been developed by the German Stoma, Continence and Wound Association (in German: Fachgesellschaft Stoma, Kontinenz und Wunde e.V.).

The need

Changing the dressing on an abdominal surgical wound can leave a lasting impression on the people involved. Intestinal secretions are identified for the first time, and patients can realise within a very short time whether an unexpected complication is interrupting the planned healing process. In this situation, the attending doctors should do their best to calm the patient down, take note of the complications and order any required initial emergency treatment.

The nursing staff involved usually have the role of providing primary care for the laparotomy wound with the secretion leakage site to manage the acute situation, and support the first diagnostic and therapeutic interventions. During the care management process, carers are often the people who, along with the attending physicians, listen to

and address patients' worries, concerns and questions. This requires specialised expertise, extended knowledge, skills and abilities that go far beyond the qualifications acquired during professional training. As a result, there is a vital need for further specialised training for nursing staff after they have completed their primary training. Based on this conclusion, the board of the German Stoma, Continence and Wound Association decided in 2022 to create a training programme for nurses on holistic care management for people with enteral fistulas.

Aims

A core objective of the German Stoma, Continence and Wound Association is to help address the special challenges in the care and treatment of people with enteral fistulas, support nursing staff and further the professional development of the sector by offering suitable training programmes. Qualifications for the holistic care management of people with enteral fistulas have been part of specialist nursing curriculums in ostomy, continence and wound care for many years. This new training programme represents a segment of this specialist further training.

Development

Not all nurses are able to participate in comprehensive professional training over a period of 2 years. For some nurses, specialised further training with a total of 40 teaching hours is deemed sufficient. To meet the different learning requirements

of as many nurses as possible, the new training programme was designed as a combination of virtual learning at home and face-to-face teaching in an educational institution. As a special training objective, comprehensive and holistic teaching was added with the maximum possible practical orientation. This begins with the high demands on the lecturers' practical experience, their interdisciplinary product knowledge and the mandatory inclusion of complex case studies in the theoretical and practical lessons.

However, although the training is practice-orientated, the inclusion of available evidence from scientific publications in medicine and nursing has also been essential. The learning aims formulated for this are orientated towards the holistic needs for the care and treatment of people with enteral fistulas.

The training provides qualified nurses with the specific knowledge, skills, competences, behaviours and attitudes required to perform tasks across all sectors of healthcare and social services. The importance of integrating the participants as part of local and regional networks is also emphasised, as well as the need to build and expand nursing and care networks.

As specialists in comprehensive care management for people with enteral fistulas, nurses often work independently, and must be able to fall back on practical guidelines, standards and the advice and support of experienced colleagues, if necessary. The training content also includes:

- Specialist aspects of care documentation in the care of people with enteral fistulas
- Specialist knowledge for formulating recommendations for therapeutic aids and orders for dressings
- Argumentation support in the event of a need for argumentation in communication with cost units, care facilities and caring relatives.

Implications for practice

With the new professional education programme, the German Stoma, Continenence and Wound Association is responding to the identified need of nursing staff to gain qualifications in holistic care management for people with enteral fistulas.

Given the family-friendly and work-friendly organisation of the training course, many nurses should be given the opportunity to develop the knowledge and skills acquired during their primary training, and to acquire further specialist knowledge. On conclusion of this training course, participants will be able to record, plan and organise holistic care management for people with enteral fistulas.

The Committee of the German Stoma, Continenence and Wound Association has also decided to support and evaluate the implementation of this training programme for care professionals on comprehensive care management for people with enteral fistulas. Together

with aCaredemie, this qualification will take place as part of a pilot course in Saarbrücken. Implementation was planned for the last week in June 2023. Following the implementation of a successful pilot seminar, the evaluated curriculum will be made available to all interested cooperation partners from the education sector for licensed implementation in accordance with the specifications of the German Stoma, Continenence and Wound Association after evaluation, modification of the curriculum and the curriculum guidelines. The overall aim has been to create a nationwide training programme for the comprehensive care management of people with enteral fistulas. **GN**

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Granuloma management: exploring treatments beyond the junction

Abstract

Stoma nurses possess highly specialised skills that are essential for the provision of ongoing support for patients living with stomas. This is particularly relevant in the management of stoma-related issues, as stoma nurses possess the skills to independently manage peristomal and stomal complications. Granulomas are common complications for many stoma patients. Nurses play an essential role in ensuring the correct treatment is provided or put in place. While the exact 'how to manage' process for granulomas at the mucocutaneous junction has been established in guidelines and protocols, there is a lack of guidelines for how to manage mucosal granulomas, which are found on the stomal spout. This article explores the available treatment options for granulomas—both at the mucocutaneous junction and on top of the stoma—and presents a case study of successful treatment of mucosal granulomas.

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Key words

- Granulomas
- Mucocutaneous junction
- Mucosal granulomas
- Stoma
- Stomal complications

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A stoma is a surgically created opening in the abdomen that allows body waste, such as faeces and urine, to be collected at the surface of the abdomen into a stoma bag. A healthy stoma is a similar colour to the mucosal lining of the mouth, moist and well-perfused. The skin around it (peristomal skin) should be intact and the same colour and appearance as the skin at any other part of the body (Marinova et al, 2021).

There are more than 205 000 ostomates in the UK (Hodges, 2022); it is estimated that around one in 335 people in the UK have a stoma. Patients with a stoma have complex needs and require long-term specialist expertise and care, which is provided by stoma nurse specialists. The Association of Stoma Care Nurses UK (ASCN) estimates that there are around 600 stoma nurse specialists in the UK (ASCN, 2015), with an average caseload of around 350–400 stoma patients per stoma nurse specialist, though this may be much higher.

One of the most common reasons for stoma patients to consult stoma nurses is because of complications associated with their stoma and peristomal skin. Most patients will experience complications throughout their life with a

stoma, and studies indicate that complication rates can vary widely, from 3–81% (Malik et al, 2018). Therefore, the swift management of these complications is a crucial aspect of a stoma nurse's responsibilities, as these have the potential to adversely affect the patient's quality of life (QoL) (Ketterer et al, 2021).

A granuloma is a frequent complication experienced by many ostomates. They present as friable, tender papules, which can bleed easily and affect stoma appliance adhesion (Dukes et al, 2010). They can occur at the mucocutaneous junction of a stoma or on top of the stomal mucosa (mucosal granuloma).

While the cause for granulomas may vary, there are certain factors associated with formation of granulomas. These include:

- Reactive granulation to peristomal sutures
- Chronic trauma from the stoma appliance's aperture or belts causing friction
- Chronic irritation from exposure to faecal/urine output
- Allergic reaction to stoma appliance (Lyon and Beck, 2012; Beitz and Colwell, 2014; Salvadalena et al, 2016).

Regardless of whether the patient is new to stoma care or has been managing it for

a while, a granuloma can present additional challenges. The presence of granulomas can lead to leakages, bleeding and add unnecessary stress to the stoma care routine of an ostomate (Porrett and McGrath, 2005).

Granuloma management

Most stoma nurse associations around the world, such as the WOCNS (2010) and the ASCN (2016), have guidelines and protocols for the management of granulomas. However, guidelines often do not include sections on the management of mucosal granulomas and only cover the management of granulomas at the mucocutaneous junction, which include a protocol with different management options. These guidelines often advise stoma nurses to escalate mucosal granulomas to a surgeon, dermatologist or experienced stoma nurses, and do not provide explicit guidelines on treatment.

Nevertheless, the advice for the management of granulomas at the mucocutaneous junction is unanimous, where special attention is given to the importance of having an assessment and history taking process before considering any treatment. This is to ensure that any underlying conditions, medications and correct stoma care technique are all taken into consideration when managing patients living with a stoma. Steinhagen et al (2017) describe stoma complications and highlight the importance of correct diagnosis, as some stomas may look similar but require different treatment. The expertise of stoma nurse specialists and their ability to differentiate granulomas (*Figure 1* and *Figure 2*) from pseudoverrucous lesions (*Figure 3*) and neoplasia (*Figure 4*) is a fundamental skill required to be able to manage these autonomously, as well as escalate any potential neoplastic growths.

The first-line treatment recommended for granulomas at the mucocutaneous junction is with Silver Nitrate 75% sticks, which are used to cauterise the granulomas (*Figure 5*) (ASCN, 2016). As per ASCN UK guidelines, the treatment requires applying the Silver Nitrate 75% stick for 5 seconds onto the granuloma and to be repeated once a week for up to 4 weeks. It is considered a low-risk procedure, with the only side effect reported being argyria, which is a build-up of silver metal or compounds



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Figure 1. Granuloma at mucocutaneous junction.



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Figure 2. Extensive granuloma on the stoma.



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Figure 3. Pseudoverrucous skin lesions.

in the connective tissues resulting in a dark discolouration appearance.

The second-line treatment recommended for granulomas at the mucocutaneous junction is topical corticosteroids, in the form of creams, lotions or impregnated tape (ASCN, 2016).



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Figure 4. Neoplasia at mucocutaneous junction.



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Figure 5. Silver Nitrate treatment of granuloma.

However, the use of steroid inhalers is also commonly used with selected patients. It is recommended to use these corticosteroids daily for up to 4 weeks, where caution must be taken to avoid side effects from long-term use of corticosteroids, such as peristomal skin atrophy.

The third-line treatment for granulomas at the mucocutaneous junction is cryotherapy, using liquid nitrogen (ASCN, 2016). However, as there are no protocols and competencies for stoma nurses to manage these, the advice is to avoid using this treatment, unless trained and deemed competent. If all the abovementioned treatments prove to be ineffective, then patient would usually be referred to a dermatologist or a surgeon, to consider other management options, such as surgical procedures or systemic treatment.

Currently, the ASCN management of mucosal granulomas on the stoma advises that only stoma nurse specialists with vast experience in

managing mucosal granulomas should manage such cases, and otherwise the approach should be to refer to a dermatologist or a surgeon. However, some stoma specialist nurses, are trained to perform complex procedures such as minor surgery, cryotherapy or the use of Silver Nitrate for the management of mucosal granulomas on the stoma. In such cases, where the stoma nurse specialists are competent to perform these procedures, the treatments available are same as the ones recommended for the management of granulomas at the mucocutaneous junction.

Case study: management of mucosal granulomas

Since minor surgery and cryotherapy are more complex and not commonly used in most hospital settings, the management of mucosal granulomas is conducted using Silver Nitrate 75% and topical steroids. Procedures are performed by highly specialised stoma nurses practicing at advanced nurse practitioner level. This case study presents the experience of a patient presenting with a long-standing recurrent mucosal granuloma.

Patient history

The patient is a male aged in their mid-50s. Following a diagnosis of ulcerative colitis, the patient underwent multiple bowel surgeries, including removal of colon and formation of a permanent ileostomy.

Patient overview

The patient reported long-term issues with bleeding mucosal granulomas (*Figure 2*), which were surgically excised <6 months before their recurrence (*Figure 6*). These were non-responsive to topical steroid treatment because of their size. As the patient and the authors' stoma team preferred not to resort to another surgical procedure, Silver Nitrate 75% treatment was commenced.

Intervention

The patient was assessed in clinic and different granuloma management options were discussed with him. It was decided that the most appropriate course of action would be to treat the mucosal granulomas on his stoma with Silver Nitrate 75%. The use of Silver Nitrate

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Results

75% was performed following the ASCN UK guidelines for management of granulomas at the mucocutaneous junction. However, extra precautions were taken to ensure that the surrounding healthy mucosa was not damaged, ensuring that after each application of the Silver Nitrate 75% sticks, the stoma nurse specialist allowed enough time to assess the bowel mucosa. Furthermore, it was essential that this procedure was performed by an experienced stoma nurse specialist, who has in-depth knowledge and possesses skills to ensure that the Silver Nitrate 75% was applied with the right pressure and duration, to avoid any damage to the mucosa.

It was also important to ensure that the patient was well-informed and knew what to expect after treatment, as well as what complications to report as part of safety netting. This was to ensure that the patient had realistic expectation and was not anxious about his stoma's appearance (*Figure 7*).

The patient treatment was conducted every 7–10 days for a total of 8 weeks. A total of 6 treatments with Silver Nitrate 75% were provided. This resulted in a significant reduction in the size of the mucosal granulomas after 4 treatment sessions, which was in line with the ASCN (2016) guidelines. As there were still some mucosal granulomas present after 4 treatments, because of their excessive size, two additional Silver Nitrate 75% treatments were provided. At the end of the treatment, the mucosal granulomas were all healed (*Figure 8*). However, as there were still some tiny 'lumpy' areas before the last Silver Nitrate 75% treatment, and given the patient's history of recurrence, the patient was provided with topical steroid gel: Synalar® 0.025%w/w gel (Fluocinolone Acetonide). They were given instructions to wait for a week, and if after a week any mucosal granulomas were still visible, to apply the topical steroid gel for 1 week at each appliance change. The reason behind this



Figure 6. Granulomas prior to treatment.



Figure 7. Granulomas after treatment.

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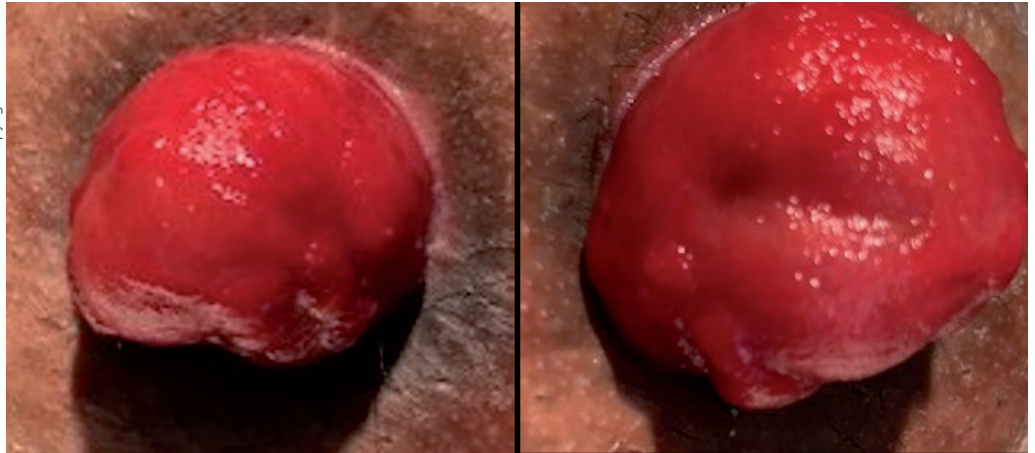


Figure 8. Granulomas at treatment completion.

was to ensure that any residual granulomatous areas were completely healed without causing any damage to the bowel mucosa by using Silver Nitrate 75% to intact areas.

Given the history of rapid recurrence of mucosal granulomas (less than 6 months), the patient was advised to use the topical steroid treatment for up to 4 weeks at each appliance change in the event of future recurrences, to prevent future granulomas from recurring and becoming significantly larger. As it was suspected that the rapid recurrence may be as a result of friction with clothing, as well as activities of daily living, the patient was provided with a stoma shield and advised to use it as needed.

Important considerations

It is important to note that the use of Silver Nitrate 75% for the treatment of granulomas on the stoma mucosa is a procedure requiring time, as well as skilled stoma care clinicians. It is essential that when undertaking this procedure for the first time, the stoma nurse should be supervised by an experienced stoma nurse specialist or surgeon. Therefore, it is of paramount importance to have the skills and resources to conduct these procedures safely, ensuring both nurses and patients are well supported.

Conclusions

The management of patients' granulomas in nurse-led clinic significantly improves patients' QoL and allows them to feel more confident with their stoma. Having highly specialised stoma nurses also eliminates the need for surgical interventions or unnecessary appointments with a surgical or medical team. This is why it is fundamental that stoma nurse specialists are well-supported and continuous investment in upskilling and advanced skills training is provided. These stoma nurse specialists contribute greatly to improving patients' care, reducing the waiting times and cost to healthcare, and reducing the burden placed on surgical and medical teams. Stoma nurse specialists can independently manage stoma complications and prevent unnecessary minor surgical procedures, such as the excision of granulomas, and manage these early, potentially preventing cases where stomas may need to be refashioned.

GN

Declaration of interest None

Association of Stoma Care Nurses. Stoma care nursing

CPD reflective questions

- Why is it important for stoma nurses to be trained to autonomously perform procedures and prevent unnecessary referrals to surgical and medical teams?
- What are the implications for highly specialised nurses taking on responsibilities and skills traditionally part of the role of doctors and surgeons?
- How does the autonomy of stoma nurses in managing complications contribute to the overall efficiency of the healthcare system, and what impact does this have on patient care continuity and outcomes?

Key points

- Having highly specialised nurse-led clinics is essential in ensuring patients are supported and any problems with their stoma are identified and resolved in a timely manner.
- Stoma nurse specialists equipped with advanced skills are uniquely positioned to treat complications without escalating and referring patients to surgical or medical teams.
- Experienced stoma nurse specialists can effectively manage complications, reducing the risk of hospital readmissions, and improving overall patient health outcomes.

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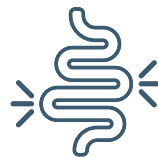
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The impact of urinary and bowel incontinence: psychological and physical effects and interventions

Abstract

This clinical review explores the multifaceted impact of urinary and bowel incontinence on the physical and psychological wellbeing of individuals, particularly older adults. The psychological effects, which often include anxiety, depression and social isolation, are addressed through interventions such as cognitive behavioural therapy and peer support groups, which are crucial for alleviating the emotional burden. The review also examines conservative management strategies, such as pelvic floor muscle training, bladder retraining and dietary changes, as well as discussing pharmacological treatments and surgical options for more severe cases. A key emphasis is placed on the importance of a multidisciplinary approach and incorporating the expertise of continence nurses, physiotherapists, occupational therapists and psychologists to comprehensively address patient needs.

Urinary and bowel incontinence represent major public health challenges; while they can affect individuals of all ages, they are particularly prevalent among older adults (Mack et al, 2024).

Both conditions can have profound physical and psychological impacts, often leading to diminished quality of life and social isolation (Assmann et al, 2024). Incontinence is frequently underreported because of the stigma and embarrassment associated with the condition (Garg et al, 2024).

The multifaceted nature of incontinence necessitates a holistic approach to treatment, which addresses both the physical symptoms and the mental health consequences (Assmann et al, 2024).

This article provides an overview of the steps that can be taken to minimise the physical and psychological impacts of incontinence, including conservative measures, pharmacological treatments and psychological interventions, while emphasising the importance of a multidisciplinary approach.

Psychological impacts

Emotional burden and anxiety

Urinary and bowel incontinence can have a profound psychological impact on those affected, often leading to emotional distress, anxiety and depression (Balestrieri et al, 2023). The stigma associated with loss of bladder or bowel control fosters embarrassment, causing many patients to remain silent rather than seek help (Devendorf et al, 2021). Previous studies show that individuals with incontinence have significantly higher rates of psychological conditions, particularly depression and anxiety, compared to the general population (Steiblieni et al, 2020; Kalata et al, 2023).

Anxiety is common among those with urinary incontinence, particularly as a result of the unpredictability of the condition (Woodward, 2023). Patients often experience a constant fear of 'accidents,' severely limiting their social, professional and personal lives (Assmann et al, 2024). This anxiety can further exacerbate incontinence episodes, creating a vicious cycle where stress worsens symptoms, which in turn

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heightens stress. For instance, the Norwegian EPINCONT (HUNT) 10-year study found that women with urinary incontinence had a 1.26 higher odds ratio for anxiety and a 1.45 higher odds ratio for depression compared to those without incontinence (Felde et al, 2017). An odds ratio is a statistical measure showing the likelihood of an outcome occurring in one group compared to another. An odds ratio of greater than 1 indicates a higher odds of the outcome; in this case, anxiety (1.26) and depression (1.45) in women with incontinence. This demonstrates the significant association between incontinence and mental health, highlighting the importance of managing both aspects concurrently.

Depression

Depression is another common psychological consequence of incontinence (Kalata et al, 2024). The constant need to manage symptoms, the feelings of helplessness and the impact on self-esteem all contribute to a higher incidence of mood disorders in individuals with both urinary and faecal incontinence. One study by Wu and Wu (2023) found that the prevalence of depression among individuals with urinary incontinence was 10.91%. Urge incontinence accounted for most cases (50.53%), and the adjusted odds ratio for the association between depression and urinary incontinence was 2.69. An adjusted odds ratio is a measure showing the association between two conditions, accounting for other factors. This highlights the significant correlation between incontinence and increased risk of depression, reinforcing the need for comprehensive approaches addressing both physical and psychological aspects of the condition. This is particularly noted in the elderly population, where incontinence is often seen as a symbol of loss of control and autonomy (Knowles et al, 2022).

For older adults, incontinence can result in social withdrawal, reduced participation in activities they previously engaged in and an increased sense of isolation (Javanmardifard et al, 2022). Similarly, caregivers can also experience significant psychological burdens (Mohamed et al, 2021). The chronic nature of the condition means that caregivers, particularly those looking after elderly relatives, may experience heightened stress, leading to burnout and strained family relationships.

Steps to limit the psychological effects

Given the profound psychological impact of urinary and bowel incontinence, mental health interventions are critical to achieving holistic care. Addressing the emotional impact of incontinence can significantly improve a patient's quality of life and adherence to treatment (Mack et al, 2024).

Cognitive behavioural therapy

Cognitive behavioural therapy (CBT) is a widely recognised psychological intervention for managing the anxiety and depression associated with incontinence (Biyong et al, 2024). CBT helps patients reframe negative thought patterns surrounding their condition, such as fear of public accidents, or feelings of embarrassment and shame (Laidlaw et al, 2003). By challenging these unhelpful beliefs, CBT allows patients to regain confidence in social situations and better manage their incontinence-related anxiety. CBT can also help to break the cycle of anxiety-induced incontinence by teaching patients coping strategies such as relaxation techniques and mindfulness exercises. A previous systematic review of qualitative studies highlighted the importance of addressing incontinence-associated stigma and the potential role of CBT in alleviating the psychological burden of these conditions (Murphy et al, 2022).

Mindfulness and relaxation techniques

Mindfulness-based interventions, such as mindfulness-based stress reduction (MBSR), have been shown to reduce the psychological stress associated with incontinence (Şener and Timur Taşhan, 2021). These techniques help patients become more aware of their bodily sensations and reduce the sense of urgency that often accompanies incontinence episodes. Relaxation exercises, such as deep breathing and progressive muscle relaxation, can also help to alleviate the stress and anxiety that exacerbate incontinence symptoms (Tang et al, 2022).

For instance, a study by Baker et al (2012) demonstrated that MBSR significantly reduced incontinence episodes, decreasing them from 4.14 to 1.23 times per day. These techniques are particularly useful for patients whose incontinence is triggered or worsened by psychological stress.

Support groups and peer networks

Support groups offer a valuable resource for individuals living with incontinence, providing a platform for patients to share their experiences, challenges and coping strategies (Byfield, 2020). Peer networks can help to reduce feelings of isolation and stigma, offering emotional support from others who understand the struggles associated with incontinence (Bladder and Bowel UK, 2024).

Online support groups are increasingly popular, providing a convenient and accessible way for patients to connect with others from the comfort of their own homes. Participating in these groups can empower patients to take a more active role in managing their condition and encourage them to seek medical help without fear of judgment (Bladder and Bowel UK, 2024).

Psychological support

Psychologists and counsellors are vital in helping patients cope with the emotional impact of incontinence. They work with individuals to develop coping strategies, reduce anxiety and improve self-esteem. Additionally, psychologists can help patients address underlying mental health conditions, such as depression and anxiety, which may be contributing to their incontinence (Emery et al, 2012).

Physical consequences of incontinence

Skin complications

The physical impact of incontinence is significant, with prolonged exposure to urine or faeces posing a serious risk of skin breakdown and infection (Mitchell and Hill, 2020). Incontinence-associated dermatitis (IAD) is a common complication, particularly among patients with urinary incontinence, as moisture from urine weakens the skin's barrier function (Ferreira et al, 2020).

IAD can manifest as erythema, maceration and skin ulceration, particularly in areas where the skin is exposed to repeated episodes of incontinence (Beeckman et al, 2010). The risk is heightened in older adults, where the skin is more fragile and prone to breakdown. In severe cases, patients can develop pressure ulcers, particularly if they are immobile and remain in wet pads or clothing for extended periods.

Urinary tract infections

Incontinence also increases the risk of urinary tract infections (UTIs), particularly in women (Czajkowski et al, 2021). The constant exposure of the urethra to bacteria from faeces or urine creates a breeding ground for infection. Left untreated, UTIs can progress to more serious conditions, such as pyelonephritis, which can have significant long-term consequences (Mititelu et al, 2024). Preventing UTIs involves maintaining good hygiene, encouraging regular voiding and, in some cases, the use of prophylactic antibiotics.

Physical burden on mobility and activity

Faecal incontinence is associated with a range of physical complications, including anal irritation, haemorrhoids and anal fissures (Bharucha et al, 2022). Chronic faecal incontinence, often exacerbated by constipation, can lead to faecal impaction, a condition where hardened stool becomes lodged in the rectum, resulting in overflow incontinence. This requires medical intervention and increases the likelihood of recurrent episodes of incontinence. Patients with incontinence often restrict their movements to avoid accidents, which can lead to decreased physical activity, muscle weakening and an overall decline in physical health.

Steps to limit the physical effects of incontinence

Pelvic floor muscle training

Pelvic floor muscle training (PFMT) is a widely recognised and effective conservative treatment for both urinary and faecal incontinence (Mazur-Bialy et al, 2020). The pelvic floor muscles provide critical support for the bladder, bowel and other pelvic organs, and when strengthened, these muscles can greatly improve continence. PFMT is particularly effective for stress urinary incontinence, where the pelvic floor is unable to properly support the urethra during activities that increase intra-abdominal pressure, such as coughing or sneezing (Akter, 2021).

In faecal incontinence, PFMT helps to strengthen the anal sphincter and rectal muscles, improving control over bowel movements (Pun et al, 2024). The key to successful PFMT is patient adherence, as the exercises need to be performed regularly, ideally under the

supervision of a physiotherapist. A systematic review and meta-analysis by Woodley et al (2020) demonstrated the effectiveness of PFMT in reducing urinary incontinence, showing a 62% reduction in late pregnancy and a 29% reduction in the postnatal period. However, evidence for faecal incontinence reduction remains inconclusive, highlighting the need for more targeted research to fully assess its impact.

Bladder and bowel retraining

Bladder retraining is another essential component of conservative management, aimed at increasing the time between voiding episodes and encouraging patients to resist the urge to urinate as soon as it arises (Kegel, 2023). This technique is particularly useful for those with overactive bladder syndrome, helping to reduce the frequency and urgency of urination (Booth and Bliss, 2020). Bowel retraining follows a similar principle, where patients are encouraged to establish regular bowel movements by following a structured toileting schedule. A systematic review by Lopes Rocha et al (2022) highlighted that these techniques, including scheduled voiding intervals and urgency suppression, helped individuals with overactive bladder and faecal incontinence reduce symptoms. Through consistent practice, participants showed notable improvements in continence and quality of life. The use of fibre supplements and adequate hydration further supports bowel function by helping to regulate stool consistency (Brown et al, 2021).

Dietary management

Dietary changes can play a significant role in managing both urinary and faecal incontinence (Andy et al, 2020). For patients with urinary incontinence, avoiding bladder irritants such as caffeine, alcohol and artificial sweeteners can help reduce symptoms. In contrast, individuals with faecal incontinence often benefit from a high-fibre diet, which helps to increase stool volume, making it easier to control. For those with constipation-related faecal incontinence, a balanced diet rich in fluids and fibre is crucial to prevent faecal impaction.

Skin care and hygiene

Managing skin integrity is a crucial aspect of physical care in incontinence (Payne, 2020).

Patients or their caregivers should be diligent in keeping the skin clean and dry, using mild cleansers and barrier creams to protect against moisture and friction. In cases where skin breakdown has occurred, early intervention with wound care protocols can prevent the progression to more severe conditions, such as pressure ulcers or infections.

Pharmacological interventions

Antimuscarinics

For patients who do not achieve sufficient control of their symptoms through conservative measures, pharmacological interventions may be necessary. Antimuscarinic medications, such as oxybutynin and tolterodine, are commonly prescribed for patients with overactive bladder (Lin et al, 2020). These drugs work by inhibiting the bladder's involuntary contractions, thereby reducing the frequency and urgency of urination (Gandi and Sacco, 2021). While effective, these medications can cause side effects such as dry mouth, constipation and blurred vision, which may limit their use in older adults.

Beta-3 adrenergic agonists

Beta-3 adrenergic agonists, such as mirabegron, offer an alternative to antimuscarinics for the treatment of overactive bladder (Fogaing et al, 2020). These medications relax the bladder's detrusor muscle, increasing its capacity without causing the same anticholinergic side effects. Mirabegron is often preferred for older adults because of its lower risk of cognitive impairment (Wagg et al, 2020).

Medications for faecal incontinence

For patients with faecal incontinence, medications such as loperamide can help slow bowel movements and firm up stool, reducing the likelihood of accidents (Bharucha et al, 2022). In contrast, patients with constipation-related faecal incontinence may require stool softeners or laxatives to relieve impaction and promote regular bowel movements (Watkins, 2020).

Topical oestrogens

Topical oestrogens may be used in postmenopausal women to improve the health of the vaginal and urethral tissues, which can become thin and dry as a result of oestrogen deficiency (Palacios et al, 2020). These

medications help improve urinary continence by supporting the tissues surrounding the bladder and urethra, reducing episodes of stress incontinence (Nightingale, 2020).

Surgical interventions

When conservative and pharmacological approaches do not provide sufficient relief, surgical interventions may be required for both urinary and bowel incontinence. Surgical treatments can offer long-term solutions, particularly for patients with severe incontinence that significantly impacts their quality of life. However, surgery is generally considered a last resort after other less invasive treatments have been exhausted.

Mid-urethral sling surgery

One of the most common surgical procedures for stress urinary incontinence, particularly in women, is the mid-urethral sling surgery (Lo et al, 2020). This procedure involves placing a synthetic mesh sling under the urethra to support it, preventing urine leakage during activities that increase abdominal pressure, such as coughing, sneezing or exercising. A recent study by Qatawneh et al (2024) showed that mid-urethral sling surgery has high success rates for treating stress urinary incontinence (SUI), with 81–85% of patients achieving either subjective or objective cure rates after the procedure. However, complications such as vaginal mesh erosion (reported in 2.7% of cases), mild pain and reoperation (9.0%) can occur. The procedure has proven to be particularly effective for primary SUI, although recurrent SUI cases tend to have lower success rates.

Sacral nerve stimulation

Sacral nerve stimulation (SNS) is a minimally invasive treatment used for both urinary and faecal incontinence (Leo et al, 2020). It involves the implantation of a small device that sends electrical impulses to the sacral nerves, which control bladder and bowel function. SNS is particularly effective for patients with overactive bladder or neurogenic bladder, as well as those with faecal incontinence caused by sphincter dysfunction (Assmann et al, 2020). This treatment has shown promising long-term results, with studies indicating sustained improvements in continence in many patients

over several years. The procedure is typically performed in two stages: a trial phase to assess the patient's response to stimulation, followed by permanent implantation if the trial is successful.

Botulinum toxin (Botox) injections

Botox injections have been used successfully to treat overactive bladder by relaxing the bladder muscle and reducing involuntary contractions (Kuzmin et al, 2022). This treatment is particularly useful for patients who do not respond well to oral medications. While effective, the effects of Botox are temporary, typically lasting 6–12 months, and repeat injections are required to maintain continence (British Society of Urogynaecology, 2019). Adverse effects include urinary retention, which may necessitate intermittent catheterisation in some patients.

Sphincter repair and colostomy for faecal incontinence

For patients with faecal incontinence, particularly following trauma or surgery, sphincteroplasty (sphincter repair surgery) may be considered (Spivak and Hull, 2022). This procedure involves the surgical repair of damaged anal sphincter muscles, restoring the patient's ability to control bowel movements. Sphincteroplasty has been shown to improve continence in a significant number of patients, although the success rate tends to decline over time. In cases of severe or intractable faecal incontinence, where other treatments have failed, colostomy may be an option (Muñoz-Duyos et al, 2022). A colostomy involves diverting the colon to an opening in the abdominal wall (stoma), through which stool is collected in an external pouch (Spahiu et al, 2020). While this is a more radical intervention, it can provide a permanent solution for patients whose incontinence is unmanageable by other means. Colostomy can significantly improve the patient's quality of life by eliminating the fear of accidents, but it requires a high level of patient education and adaptation to stoma care (Stavropoulou et al, 2021).

Multidisciplinary approach to incontinence management

Incontinence is a complex condition that often requires input from a multidisciplinary team to ensure comprehensive care. The

CPD reflective questions

- How can healthcare professionals better address the psychological impacts of incontinence on patients, particularly in terms of reducing stigma and promoting help-seeking behaviour?
- What barriers do patients and caregivers face in adhering to conservative treatments such as pelvic floor muscle training, and how can these be overcome in clinical practice?
- In what ways can a multidisciplinary team improve outcomes for patients with incontinence compared to traditional, single-discipline approaches?
- How might the inclusion of psychological support in treatment plans improve patients' adherence to incontinence management strategies?

Key points

- Both urinary and bowel incontinence present significant physical and psychological challenges, particularly in older adults, contributing to social isolation, depression and anxiety.
- Effective management of incontinence often begins with conservative measures, such as pelvic floor muscle training, bladder retraining and dietary adjustments, alongside pharmacological treatments for more severe cases.
- The emotional impact of incontinence extends to both patients and caregivers, with psychological interventions such as cognitive behavioural therapy and support groups playing a critical role in managing anxiety, depression and the stigma associated with these conditions.
- Addressing incontinence requires the collaborative efforts of various healthcare professionals, including continence nurses, physiotherapists, occupational therapists and psychologists, ensuring that both the physical and emotional needs of patients are met.

involvement of healthcare professionals from different specialisations, including urologists, gastroenterologists, continence nurses, community or district nurses, physiotherapists and psychologists allows for a holistic approach that addresses the full range of physical and psychological challenges associated with incontinence.

Continence nurses

Continence nurses play a crucial role in the assessment, management and education of patients with urinary and bowel incontinence (Kelly, 2023). They are often the first point of contact for patients seeking help for incontinence and are responsible for conducting thorough assessments, developing personalised management plans and providing ongoing support (Hunter and Wagg, 2018). Continence nurses also educate patients and caregivers on the use of containment products, skincare and toileting techniques, ensuring that patients receive appropriate care based on their individual needs.

Physiotherapists and occupational therapists

Physiotherapists are essential in guiding patients through pelvic floor rehabilitation exercises and bladder/bowel retraining programmes (Frawley et al, 2019). They work closely with patients to ensure correct technique and adherence to exercise regimens, which are critical to the success of conservative management strategies. Conversely, occupational therapists assist patients in adapting their environment to better manage incontinence. This may include recommending home modifications, such as the installation of grab bars or raised toilet seats, to improve safety and accessibility.

Conclusions

Urinary and bowel incontinence are complex, multifactorial conditions that require a comprehensive, multidisciplinary approach to management. Conservative treatments, including pelvic floor muscle training, bladder and bowel retraining, and dietary modifications form the cornerstone of incontinence management, while pharmacological and surgical interventions are available for patients with more severe or treatment-resistant symptoms. Equally important is the recognition of the psychological toll that incontinence can take on individuals and their caregivers. Addressing both the physical and emotional aspects of incontinence is essential to improving patients' quality of life and enabling them to manage their symptoms with dignity. With a tailored, patient-centred approach that combines medical, physical and psychological support, individuals with incontinence can achieve better outcomes and regain control over their lives. **GN**

Declaration of interest None

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