

Endoscopy

Supplement

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ASSOCIATE PUBLISHER Sophie Gardner
PUBLISHING DIRECTOR Andrew Iafrafi
MANAGING DIRECTOR Anthony Kerr
CHIEF EXECUTIVE OFFICER Ben Allen
Editorial enquiries: benjamin.wakefield@markallengroup.com
Commercial enquiries: nicholas.barlow@markallengroup.com

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Motivational huddles to support team wellbeing through COVID-19

In endoscopy units, as elsewhere, COVID-19 and the resulting lockdowns and restrictions have caused a downward trend in staff motivation and wellbeing. Our unit has been addressing this with daily motivational team huddle meetings. These huddles are undertaken prior to opening doors to patients and usually last around 15–30 minutes.



A well-planned and focused huddle can greatly impact a team's ability to work cohesively and provide exceptional patient care, creating a seamless flow, increasing efficiency and reducing stress (Hills, 2016). Huddles are not only a means of keeping staff up to date with issues including unit changes, list changes, governance, compliments and training and other, but also a way of providing a little motivation to start the day with.

Before COVID-19, we often had huddles that moved away from the daily 'news reel' that the sister's team delivers, and we started to incorporate the odd motivational session. COVID-19 has stayed at the forefront of everyone's home and working lives for far longer than originally anticipated, and, as a result, the team's motivation and spirit has begun to flag. Vishesh et al (2020) reported that during the pandemic, health professionals:

'...face aggravated psychological pressure and even mental illness. It would be recommended to the policymakers and managers to adopt the supportive, encouragement and motivational, protective and training/educational interventions, especially through information and communication platforms.'

The team decided that there was a need to try to address members' flagging mental wellbeing, and so the motivational aspect of the morning huddles was increased. This followed a line of thinking expressed by Walton et al (2020):

'Colleagues and friends at work that can support each other will be an important part of maintaining good wellbeing and camaraderie during the pandemic.'

And Oshikanlu (2015):

'Demonstrate good leadership and lead by example by becoming enthusiastic about being at work can rub off on the staff you manage.'

The trust offers a wide selection of virtual wellbeing programmes, accessible to all via the internet from clinic or home. Some snippets of these programmes have been incorporated, alongside the team members' own ideas, into the daily huddle programme.

The huddle programme is printed and displayed in the staff room and on the staff notice boards for the whole team to see. Some days are left free to enable team members to inject their own ideas or request specific training. A number of previous and upcoming sessions are detailed in *Box 1*.

Box 1. Motivational huddle sessions

Random acts of kindness

Staff write down little acts of kindness to thank each other and encourage new members. This could be appreciating a smile or a positive attitude or baking a cake. These notes are placed into a box and each staff member pulls one out. A little note stating 'Your smile is infectious' really brought home to me how uplifting and powerful positivity can be.

Mini salsa lessons/Stretch and relieve tension

A member of the team who attends salsa classes in her social life volunteers to take these huddle sessions and gets the whole team moving, learning a few salsa steps to invigorating music or getting us all to relax and stretch. For those team members who prefer not to take part, the salsa sessions are also great to watch, and they get even the most reluctant of toes tapping.

Hula hoop

The hula hoop session proved extremely uplifting, and everyone loved it. This session also highlighted an easy way to exercise at home for a relatively low cost. More importantly, it had the whole team giggling and wanting to give it a go. The longest any one managed to keep the hula hoop going for was 15 seconds.

Meditation video

A 10-minute meditation video was shown to the team and proved an unexpected hit (Levitt, 2016). Although watching a meditation video may seem strange before heading off to a busy full day's work, it went down very well with the staff, who asked for it to be repeated in the future. Crises such as the COVID-19 pandemic show that change is the only constant, and meditation and mindfulness can offer a helpful way to live with constant change (Behan, 2020).

Guess who the baby is

The team members are already looking forward to this upcoming session and have been sending in their photos. It is expected to provide much amusement.

Cup of coffee and a chat

A casual sit down and a chat has become one of the most anticipated post-lockdown opportunities.

Action for Happiness

An activity is chosen from a calendar provided by the online organisation Action for Happiness (2021).

One good thing

Each team member is asked to think of one good thing in their day, week or life to discuss. The intent is that positive emotions should open minds and hearts, changing attitudes on a biochemical level (Fredrickson, 2001).

Mood cards

These miniature mood cards are intended to inspire people to embrace positive habits and improve wellbeing. There are different colours representing mindfulness, personal development, self-care, self-confidence and emotional awareness (Harn, 2015). Team members pick a card each, read it out and discuss. Example include the 'I am not alone' emotional awareness card and the 'I already have what it takes' self-confidence card.

Empowering questions

Empowering question cards from Sunny Present (2015) are intended to help people discover and release their inner strength and bring more energy into their lives. A prompt might be 'What if everything is as it should be?'. Team members are asked to pick cards and then discuss.

These huddles involve undertaking a lot of training; sessions are repeated regularly, and the team benefits greatly from this. Training sessions are often videoed, and the videos are then uploaded onto the endoscopy team's WhatsApp group. This online platform allows team members to save videos and have them to hand to refresh their knowledge. The WhatsApp group is used by the whole team, with members using it to give feedback, motivation and support. This can be as simple as sharing uplifting or amusing messages and photos, such as wishing each other happy birthday.

All members of the team are encouraged to take part in each huddle, and the majority generally do. Many colleagues have reported thoroughly enjoying all of the activities and that they walk away to start their day just little bit more upbeat and a little more motivated. **GN**

Vicky Ringland, Endoscopy Lead Practitioner, University Hospitals of Derby and Burton (vicky.ringland@nhs.net)

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3rd World Congress of GI Endoscopy to take place in Japan, May 2022

Looking forward to the next global conference from the World Endoscopy Organization, in partnership with the Japan Gastroenterological Endoscopy Society

Fabian Emura, ENDO 2022 President; **Hisao Tajiri**, ENDO 2022 Co-President (secretariat@worldendo.org)

The 3rd World Congress of GI Endoscopy, ENDO 2022, will be held on 13–15 May 2022 in the heritage city of Kyoto, Japan. The event is a collaboration between the World Endoscopy Organization (WEO) and the Japan Gastroenterological Endoscopy Society (JGES), and it will mark the 103rd JGES congress. WEO and JGES have a close relationship that dates back several decades, over which the two organizations have collaborated for the advancement of scientific knowledge, especially in the field of GI endoscopy.



The mission of the WEO World Congress of GI Endoscopy is to bring together experts, leading thinkers, researchers, innovators and educators in endoscopy onto a single platform for an exchange of knowledge. The first World Congress took place in Hyderabad, India, in 2017, and the second in Rio De Janeiro, Brazil, in 2020. Both of these meetings were attended by over 3500 delegates from all parts of the world.

The scientific committee (Figure 1) is hard at work planning a programme for this global meeting that will highlight international best practice in endoscopy and promises to address regional issues in healthcare that relate to GI endoscopy. Some of the notable features of the ENDO

2022 scientific programme are covered in Box 1. WEO President, Fabian Emura, has said that:

'As Chair of the ENDO 2020 Scientific Committee, I had the privilege to work with representatives from many eminent societies to further develop

a state-of-the-art programme that brought a wealth of international expertise and enriched discussion in Rio de Janeiro. For the 3rd Congress, I am very honored to work with co-president Hisao Tajiri in planning a special meeting that will continue to promote the mutual exchange of



Figure 1. (Left to right) Fabian Emura, ENDO 2022 President; Hisao Tajiri, ENDO 2022 Co-President; Prateek Sharma, ENDO 2022 Scientific Committee Chair; and Yutaka Saito, ENDO 2022 Scientific Committee Co-Chair

Box 1. Conference highlights

Honorary lectures

Luminaries in the field of gastrointestinal endoscopy and gastroenterology will deliver the prestigious Named Lectureships, each representing one of the World Endoscopy Organization (WEO) zones:

- **The Sadataka Tasaka Honorary Lecture**
Asian-Pacific Society for Digestive Endoscopy (A-PSDE)
- **The François Moutier Honorary Lecture**
European Society for Gastrointestinal Endoscopy (ESGE)
- **The Rudolf Schindler Honorary Lecture**
Inter-American Society of Digestive Endoscopy (SIED)

These seminal lectures, which are a highlight of the Congress, aim to have an impact on daily practice and point to new areas of research.

Live demonstrations

Real-life viewing of endoscopic procedures is an important teaching tool. These live instructive demonstrations see expert clinicians demonstrate techniques, from the basics and to the cutting-edge. Broadcasts are anticipated from Japan, India, Korea and China. The sessions will end with a discussion between the demonstrators and expert chairs, to look back and reflect on the learning experiences presented during the demonstrations.

experience and knowledge in the field of endoscopy.'

The Chair of the ENDO 2022 Scientific Committee, Prateek Sharma, shared

his vision regarding the planning of ENDO 2022:

Box 1. Conference highlights

Scientific symposia

The ENDO 2022 scientific committee comprises eminent experts from around world. They are working closely together to consider all aspects of endoscopy and then to prune the selection down to create a programme that distils the most innovative ideas and significant themes in endoscopy today.

Society symposia

Partnering societies will have the opportunity to present regional challenges and recent advances at individual society symposia, developed as a collaboration between particular societies and the ENDO 2022 Scientific Committee.

Learning centre

The learning centre will offer a variety of educational programmes for clinicians, from beginners to experts, to enhance their skills. These will include video capsule endoscopy training, an endoscopic ultrasound case conference, and courses on high quality in upper gastroenterology and advanced diagnosis in endoscopy.

Hands-on training

An exclusive hands-on training area will provide dedicated stations where participants can improve their skills, learn from the latest clinical cases and use more advanced equipment and techniques.

Breakfast with the experts

These breakfasts will see experts covering the latest trends and topics in detail. The intimate and interactive setting should allow open discussion among participants.

Video World Cup

The Video World Cup will showcase short videos that offer examples of new, unexpected, or exceptional cases, with commentary from a panel of experts.

'Yutaka Saito, co-chair of the scientific committee, and I would like to focus not only on presenting the most recent advances in the technology of gastrointestinal endoscopy for advanced experts, but also on providing a solid learning opportunity for young doctors and other practitioners to learn from the best and to improve their daily practice.'

Finally, the organisers of ENDO 2022 are looking forward to a close co-operation with industry partners, who will be invited to participate in dedicated and up-to-date symposia. Endoscopy professionals are encouraged to save the date (13–15 May 2022), as well as stay connected via the WEO Newsletter to learn about the programme as it evolves. A personal invitation to the Congress from ENDO 2022 Presidents Fabian Emura and Hisao Tajiri can be found at www.worldendo.org/weo-congresses/endo-2022/. We look forward to seeing you in Kyoto. **GN**

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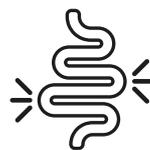
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WEO

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Different together: 25 years of European success



Ulrike Beilenhoff reflects on the ongoing achievements of Europe's professional organisation for nurses working in gastrointestinal endoscopy and related fields

Ulrike Beilenhoff, Scientific Secretary, European Society of Gastroenterology and Endoscopy Nurses and Associates (info@esgena.org)

In October 2021, the European Society of Gastroenterology and Endoscopy Nurses and Associates (ESGENA) will celebrate its 25th anniversary. ESGENA members can look back on 25 years of inspiring moments, enriching differences and unifying similarities.

History

The first European conference for endoscopy nurses was held in 1994, in Oslo, Norway. There, a small group of enthusiastic nurses met to discuss the possibility of forming a European endoscopy nurses' group. With the encouragement and financial support of the European Society of Gastrointestinal Endoscopy (ESGE), a working party was set up, with the aim to write the constitution for the planned society. The group members came from Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Norway and the UK. Members for an interim governing board were chosen and together presented the final draft of the constitution to delegates at the second European conference, held the following year, in Berlin, Germany. The first ESGENA conference took place a year later, in November 1996, in Paris, France. This conference saw the first official elections of officers to the governing board, and the new society was born.

Membership

ESGENA has over 7000 members, from 52 countries worldwide. The ESGENA membership consists of group members, who are individual nurses working in gastroenterology and/or endoscopy nursing, as well as passive and affiliated

members with an interest in the field. The ESGENA individual membership is open to registered nurses or associates who practise, manage, teach or fulfil research tasks in gastroenterology and endoscopy nursing and who wish to benefit and contribute to the society's purpose to promote good patient care in gastroenterology and endoscopy.



European Society of Gastroenterology
and Endoscopy Nurses and Associates

Active in this group are 34 national societies and nursing associations from 30 European countries. Each national member group has the right to nominate one delegate for the annual general assembly, with the ability to vote on behalf of their country. In order to ensure equality between countries and to prevent the dominance of any single country, each country has the right to cast one vote in elections and other decisions. Countries with an ESGENA group membership nominate education experts for the ESGENA education working group, which develops curricula and position statements.

ESGENA is a member of the European Specialist Nurses Organisation (ESNO),

which is the umbrella society for all nursing specialities in Europe. ESNO has close contacts with European political bodies, and so being part of this wider group helps give greater voice to ESGENA members (<https://www.esno.org>).

Comparability of education

Since the late 1990s, specialist courses for endoscopy and gastroenterology nurses have been established in 22 European countries. These courses vary in length, content, academic level and official recognition. In 2008, ESGENA (2008) developed a European core curriculum for endoscopy nursing, which led to harmonisation of courses and promoted the trend toward university-based courses. This helped fulfil the Bologna Process, a series of agreements between European countries to ensure comparability in the standards and quality of higher-education qualifications.

Short courses of 1–10 weeks are still in place in seven countries (Belgium, the Czech Republic, Denmark, Poland, Romania, Slovenia, Spain). These courses are mainly focused on gastrointestinal endoscopy. These have are focussed on continuing education, and 50% of them lead to a recognised qualification.

Intensive courses of 6–24 months have been established in 15 countries (Austria, Croatia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Netherlands, Norway, Portugal, Sweden, Switzerland and the UK). These courses follow an official core curriculum, offer theoretical and practical training and lead to a recognised qualification. Eight of these 15

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It's never been more important than now to be a part of the ESGENA community

- AHPs can attend the full UEG Week programme for a reduced registration fee
- Allied Health Professionals (AHPs) include the fields of professions: Nurses, Nutritionists, Dieticians, Psychologists, Psychotherapists, Educationalists, Statisticians, Pharmacologists, Microbiologists. This fee is only applicable for professionals without any medical degree!
- A list of FAQs is available and will be regularly updated on UEG Week website.
<https://ueg.eu/week>

Information

- <https://esgena.org>
 - <https://ueg.eu/week>
-

countries (Croatia, France, Ireland, Italy, Portugal, Sweden, Switzerland and the UK) have established courses at university level, which lead to either a bachelor's or master's degree in gastroenterology, endoscopy or critical care.

In 2019, ESGENA (2019) developed a European Curriculum for endoscope reprocessing, which clearly defined the required knowledge and skills necessary for endoscope reprocessing.

Advanced roles

Advanced roles differ from country to country. Specialist education has traditionally only been available for advanced nursing specialisms, such as IBD, oncology, stoma care and nutrition nursing.

The role of nurse endoscopists exists only in five European countries (Ireland, Denmark, Netherlands, Sweden and the UK). In all other European countries, endoscopy procedures are legally considered to be medical tasks, which cannot be delegated.

Since the early 2000s, nurse-administered propofol sedation (NAPS) has been established in just seven European countries (Austria, Denmark, Germany, Netherlands, Switzerland, Italy and Spain). In all other countries, propofol sedation remains the responsibility of the anaesthesiology department.

Co-operation

ESGENA closely co-operates with its medical counterpart, the ESGE, in the production of guidelines and position statements on various clinical topics:

- Hygiene and infection control (Beilenhoff et al, 2017)
- Sedation and patient monitoring (Dumonceau et al, 2021)
- Endoscopic techniques
- Quality assurance (Beilenhoff et al, 2007).

Representatives of ESGENA have participated in guideline working parties looking at issues of concern to both societies. Guidelines produced are published on the ESGENA website and in the journal *Endoscopy*.

Part of ESGE Days, the ESGENA Spring School combines live endoscopy, lectures, poster sessions and symposia. Due to the COVID-19 pandemic, ESGE Days 2021 will be held virtually on 25–27 March 2021 (<https://esgedays.org>). ESGENA individual members are eligible for a reduced registration fee.

Since 1996, ESGENA has been part of the United European Gastroenterology (UEG) Week. This year, UEG Week will also be held virtually, on 3–5 October 2021 (<https://ueg.eu/week>). There, ESGENA will celebrate its 25th anniversary with a special conference programme.

Benefits of membership

Individual members of the ESGENA community are able to enjoy the following benefits:

- Reduced registration fee for ESGE Days and the ESGENA Spring School (25–27 March 2021)
- Reduced registration fee for UEG Week on (3–5 October 2021)
- Exclusive access to the ESGENA membership area
- Free access to ESGENA webinars
- Eligibility for the ESGENA clinical grant programme
- ESGENA e-news (12 messages per year)

- Regular updates about ESGENA activities, ongoing guidelines, statements and curricula—and encouragement for interested members to be actively involved
- Access to the annual ESGENA general assembly, with the right to submit agenda topics, attend and speak
- Stand for ESGENA office, if based in a European country.

More information can be found on the ESGENA website at <https://esgena.org>. **GN**

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Study scope

A brief overview of recently published articles on subjects relevant to endoscopic practitioners

Shyam Menon, Consultant Gastroenterologist and Hepatobiliary Physician (shyam.menon@nhs.net); **Faiz Kuchhai**, Senior Clinical Fellow; **Reuben Kurien**, Senior Clinical Fellow, all at Royal Wolverhampton NHS Trust

Economic analysis of COVID-19 testing before endoscopy

Corral JE, Hoogenboom SA, Kröner PT et al. COVID-19 polymerase chain reaction testing before endoscopy: an economic analysis. *Gastrointest Endosc.* 2020; 92(3):524–534.e6. <https://doi.org/10.1016/j.gie.2020.04.049>

COVID-19 is a novel viral disease, which was first reported in late 2019 and had become a global pandemic by early 2020. It has had a significant impact on healthcare services. As cases of COVID-19 have increased dramatically, other services have had to be scaled down to cope. Endoscopy services have been reduced to a fraction of their baseline, and there is still uncertainty as to how to plan recovery of endoscopy services. During the early stages of the pandemic, only emergency procedures were being performed, and subsequently semi-urgent procedures have been reintroduced. In some centres, elective procedures are also being done, but this has not happened universally. However, delays in diagnostic procedures have been associated with delayed diagnosis of cancers, leading to poorer outcomes for patients. There has also been a significant financial impact on endoscopy units.

Testing for COVID-19 has become more widely available, as has personal protective equipment (PPE). The turnaround time for COVID-19 diagnostic tests were initially up to several days, but this has improved to 3–4 hours, allowing for quicker decisions. This study compared costs and outcomes with different approaches to tests.

This study analysed test and scope strategies followed in an endoscopy unit in Jacksonville, Florida. During the initial stages of the pandemic, only emergency procedures were performed (with full PPE)

without waiting for COVID-19 diagnostic polymerase chain reaction (PCR) tests. During the next stage, semi-urgent procedures were also performed after testing, in addition to urgent procedures. Urgent procedures were carried out in full PPE without waiting for results. Once the results were available, procedures were performed with normal PPE or postponed if the COVID-19 test was positive. Finally, elective procedures were also performed after testing, following similar principles to the semi-urgent procedures.

The results showed that, when only emergency procedures were performed, the endoscopy caseload was at 10%, but there were no false positive or false negative COVID-19 test results, and no staff were infected. As semi-elective work was included, the endoscopy caseload increased to 20%, but there were a few false positive/negative COVID-19 test results (1%) and one or two staff were infected per week. When the unit went back to a full workload, there were error rates of around 5% in the COVID-19 test results, but between four and ten staff were infected every week. Additionally, costs for performing the procedure with this strategy were a little over \$100 per patient, but it remained cost-effective.

The study, however, did not take into account the cost of healthcare worker infections and the effects of vaccination. Testing and performing procedures increase the economical ability to perform more procedures, but the risk of increased infections among healthcare workers persists. The authors concluded that testing for COVID-19 prior to planning a procedure would remain a critical part of whatever strategy is finally adopted in various endoscopic units.

Endoscopic retrograde cholangiopancreatography with sphincterotomy in severe acute gallstone pancreatitis

Schepers NJ, Hallensleben ND, Besselink MG et al. Urgent endoscopic retrograde cholangiopancreatography with sphincterotomy versus conservative treatment in predicted severe acute gallstone pancreatitis (APEC): a multicentre randomised controlled trial. *Lancet.* 2020; 396(10245):167–176. [https://doi.org/10.1016/S0140-6736\(20\)30539-0](https://doi.org/10.1016/S0140-6736(20)30539-0)

Acute pancreatitis is the one of the most common causes of acute hospital admissions. Gallstones are the most common cause of pancreatitis, and the prevalence of gallstones has been increasing with rising rates of obesity. Gallstones are thought to cause pancreatitis due to impaction in the distal bile duct or at the level of the ampulla of Vater. Pancreatitis can be severe, leading to significant organ failure, long-term hospital stay, including in the intensive care unit, and even loss of life. This is the group of patients needs considerable medical attention, but the best way to treat severe acute biliary pancreatitis remains unclear.

Stones within the bile duct are removed by endoscopic retrograde cholangiopancreatography (ERCP). Guidelines advocate its use when there is biliary infection (cholangitis) or features of significant bile duct obstruction (cholestasis). In the absence of these, the urgent need and timing of ERCP remains uncertain in severe pancreatitis. This lack of data is because of various shortcomings in previous studies. Additionally, ERCP is not without risks, as it is an invasive procedure with risks for adverse events as high as 10%. The available information shows that, despite this lack of data, many ERCP procedures are being performed early in the course of acute severe biliary pancreatitis.

This Dutch multicentre study was carried out in patients with acute severe biliary pancreatitis. This was the largest study of its kind to date. The diagnosis of biliary pancreatitis was made by established criteria, and severity was assessed by the presence of C-reactive protein (CRP) >150 and an APACHE score of >8 within the first 24 hours. Patients with cholangitis were not included, as they had an established indication for ERCP. Patients were randomised into two similarly sized groups to either undergo and ERCP and spincterotomy within 24 hours or be managed conservatively/medically. The people performing ERCP in the study were experienced operators. The outcomes of both groups were compared.

Of 232 patients with acute severe pancreatitis recruited into the study between 2013–2017, 118 underwent urgent ERCP and 114 were managed conservatively. The results demonstrated that more patients in the conservative group than in the ERCP group developed cholangitis during their hospital stay (2% vs 10%). However, despite this increased risk of infection, there was no significant difference in deaths (7% vs 9%), new-onset organ failure or length of hospital stay (13 vs 14 days).

The authors concluded that ERCP can be avoided in the majority of cases and only needs to be done for the established indications. In other situations, such as acute severe pancreatitis, performing early ERCP did not provide any added benefit over conservative management. The authors postulated that gallstones often cause a transient obstruction triggering the pancreatitis, and this cascade cannot be interrupted with early ERCP.

Purposeful vs routine polyp detection in colonoscopy

Chu Y, Zhang J, Wang P et al. Will purposely seeking detect more colorectal polyps than routine performing during colonoscopy? *Medicine (Baltimore)*. 2020; 99(42):e22738. <https://doi.org/10.1097/md.00000000000022738>

Colorectal cancer often arises from small neoplastic polyps. Colorectal polyps, if

missed during colonoscopy, are recognised as a cause of interval colorectal cancer (ICC). Colonic polyp detection rate (PDR) or adenoma detection rate (ADR) are therefore important factors in evaluating the quality of colonoscopic procedures.

This study sought to determine whether more colorectal polyps can be detected by actively seeking them compared with routine colonoscopy. All patients undergoing colonoscopy were randomised into groups A and B. In group A, the endoscopists were advised to seek polyps with deliberate intent during the procedure, whereas, in group B, no such instructions were given. Polypectomies were performed electively. In both groups, the cases of elective polypectomy were named AR and BR respectively, including groups AR-1 and BR-1 during the first colonoscopy and groups AR-2 and BR-2 during the second colonoscopy for polypectomy. The number of polyps detected (NPD) and the polyp detection rate (PDR) were collected, along with the number of polyps missed (NPM) and partial polyp miss rate (PPMR).

For purpose of this study, PDR was defined as the number of cases of colorectal polyps found in every 100 colonoscopies, PPMR was defined as the number of cases of partial polyps missed for every 100 cases of colorectal polyps. PMR was defined as the number of cases of colorectal polyps missed in every 100 colonoscopy procedures.

Emergency colonoscopies; patients with known pathologies, such as inflammatory bowel disease; those with colorectal surgeries; and those with previous history of polyp removals were excluded from the study.

Out of a total of 1390 patients who met the inclusion criteria, 550 patients were excluded. A total of 419 patients were enrolled in group A and 421 in group B, subsequently with 43 patients in group AR and 35 in group BR.

On completion of the study, no significant differences were observed in terms of PDR and NPD between groups A and B; PPMR, NPM and SPM between

groups AR-1 and BR-1; and PPMR, NPM and SPM between groups AR-2 and BR-2. PPMR in group AR-1 was higher than that in group AR-2 ($P < 0.05$), and similar results were found in PPMR between group BR-1 and BR-2 ($P < 0.05$). The differences in NPD, SPD, NPM, and SPM in AR-1 and AR-2 ($P > 0.05$) were not significant. However, significant differences were observed in NPD, NPM, and SPM in BR-1 and BR-2. Additionally, no significant differences were found in SPD between groups BR-1 and BR-2.

The total number of polyps removed during the second colonoscopy was significantly higher than the amount found in the first colonoscopy. This was corroborated by the higher number of NPD in BR-2 when compared with BR-1. The differences in NPD between AR-1 and AR-2 were not statistically significant, and the differences in NPD between groups A and B were not significant.

The authors concluded that purposely seeking colorectal polyps did not decrease polyp miss rates or increase polyp detection rates compared with routine performance during colonoscopy.

Impact of COVID-19 on endoscopy trainees

Pawlak KM, Kral J, Khan R et al. Impact of COVID-19 on endoscopy trainees: an international survey. *Gastrointest Endosc*. 2020; 92(4):925–935. <https://doi.org/10.1016/j.gie.2020.06.010>

The COVID-19 pandemic has affected gastrointestinal (GI) endoscopy services worldwide, including limitation of elective procedures to minimise disease transmission and outbreaks.

This study was conducted with the aim of assessing the effect of COVID-19 pandemic on procedural numbers, as well as the emotional wellbeing of endoscopy trainees, worldwide. For this, an international survey was conducted, lasting 3 weeks, in April 2020.

The primary outcome was finding the percentage reduction in monthly procedure volume before and during the COVID-19 pandemic. Endoscopy procedures studied gastroscopy, colonoscopy, endoscopic ultrasound (EUS), ERCP, and upper GI

bleed haemostasis (included within the gastroscopy numbers), for supervised, unsupervised and total numbers. Secondary outcomes included potential variation of COVID-19 impact between different continents and rates and predictors of anxiety and burnout among trainees. This was the first study to comprehensively evaluate the impact of COVID-19 on endoscopy trainees.

The study included 770 trainees from 63 countries for analysis, of which 93.8% reported a reduction in endoscopy case volume and hence training opportunities, as well as a reduction in total procedures of 99%. Although training in all procedures was disrupted by the pandemic, the

decrease was most pronounced for colonoscopy, which is regarded as a core endoscopy skill, and less so for emergency procedures, such as ERCP and GI bleeding. Restrictions in case volume and trainee activity were common barriers among the trainees. Meanwhile, 52.4% of respondents reported anxiety, and 18.8% of trainees reported burnout. Anxiety was independently associated with female sex, adequacy of PPE, lack of institutional support for emotional health and concerns regarding prolongation of training. Modifying existing national guidelines to support adequate endoscopy training during the pandemic was supported by 68.9% of the respondents.

The study revealed that the pandemic has led to serious reductions in endoscopic volumes and training, while affecting trainee wellbeing, including high rates of anxiety and burnout among trainees globally. These results highlight the urgent call to action for existing curricular requirements, and delivery of endoscopy training should be urgently reviewed and adapted to support the educational and psychological needs of endoscopy trainees during the COVID-19 pandemic. Since the effects of COVID-19 are likely to persist until 2022 at least or even beyond, the study points to a review of endoscopy training being urgently warranted to adapt to the changed circumstances. **GN**

GIN cast

THE GASTROINTESTINAL NURSING PODCAST

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Introducing JETS Workforce

The Joint Advisory Group (JAG) on Gastrointestinal Endoscopy's introduces the Endoscopy Training System Workforce programme, a structured approach to endoscopy training

JAG Endoscopy, Royal College of Physicians, London (askjag@rcplondon)

The Joint Advisory Group (JAG) on Gastrointestinal Endoscopy, part of the Royal College of Physicians, provides accreditation for endoscopy services, as well as overseeing a range of quality improvement projects. One of these projects is the JAG Endoscopy Training System Workforce (JETSW) programme (JAG, 2021a). JETSW is a UK-wide endoscopy-specific competency framework designed to support nurses, healthcare assistants and other health professionals, as well as ensure that training for the endoscopy workforce is comprehensive and consistent. It takes a structured approach to training, assessment and appraisal that allows staff to record their experience and so demonstrate their competence and skills in assisting and delivering endoscopy.

Background

Built on the All-Wales Endoscopy Competency Framework to replace the previous gastrointestinal nurses (GIN) programme, JETSW was piloted at the end of 2018 and launched in 2019. It is now used at over 200 sites and has over 1400 users in the UK. The aim is for JETSW to be used in all endoscopy services by all staff carrying out and assisting with endoscopies.

As part of JAG (2021b) accreditation, endoscopy units need to demonstrate that there is a nominated training lead, as well as policies and systems to ensure that the workforce is appropriately trained and competent, including any additional service-specific education and training.

In order to achieve this, JAG strongly recommends the use of JETSW to

support competency development and training. Debbie Johnston, JAG head assessor, explained:

'The endoscopy workforce is our most important resource, and JAG has defined specific workforce standards that services are expected to meet. Being able to demonstrate evidence of a safe, competent and well-trained workforce is key to achieving and sustaining JAG accreditation. The prime motivators for training and development are to quality assure and improve performance, safety and productivity. When JETSW is embedded in a service, it provides staff with the expertise they need to fulfil their role and make a positive impact on the endoscopy service. JETSW fully engages and equips staff with the tools to effectively provide patient care and to meet JAG accreditation standards.'

Competencies

All health professionals involved in delivering direct patient care must have demonstrable competencies relevant to their role, as detailed in the JAG Global Rating Scale (GRS) (JAG, 2021c). JETSW is built around an endoscopy-specific competency framework, which covers the knowledge, skills and behaviours required to work without supervision. It aims to keep users up to date with service developments in endoscopy and provides resources and a consistent standard to guide training—not only for individuals, but for endoscopy units and services across the UK.

The JETSW programme comprises three competency levels, each containing one or two sections, which are laid out in *Box 1*.

Online portfolio

The JETSW competency framework is supported by an online ePortfolio, a range of e-learning and training courses, which complement each level of the training programme.

The online ePortfolio holds endoscopy-specific competency frameworks, direct observation of procedural skills (DOPS), witness statements and reflective accounts that combine to create a platform for the endoscopy workforce to record and evidence their skills, knowledge, and abilities. JETSW can be used by endoscopy staff irrespective of grade, title or level of experience.

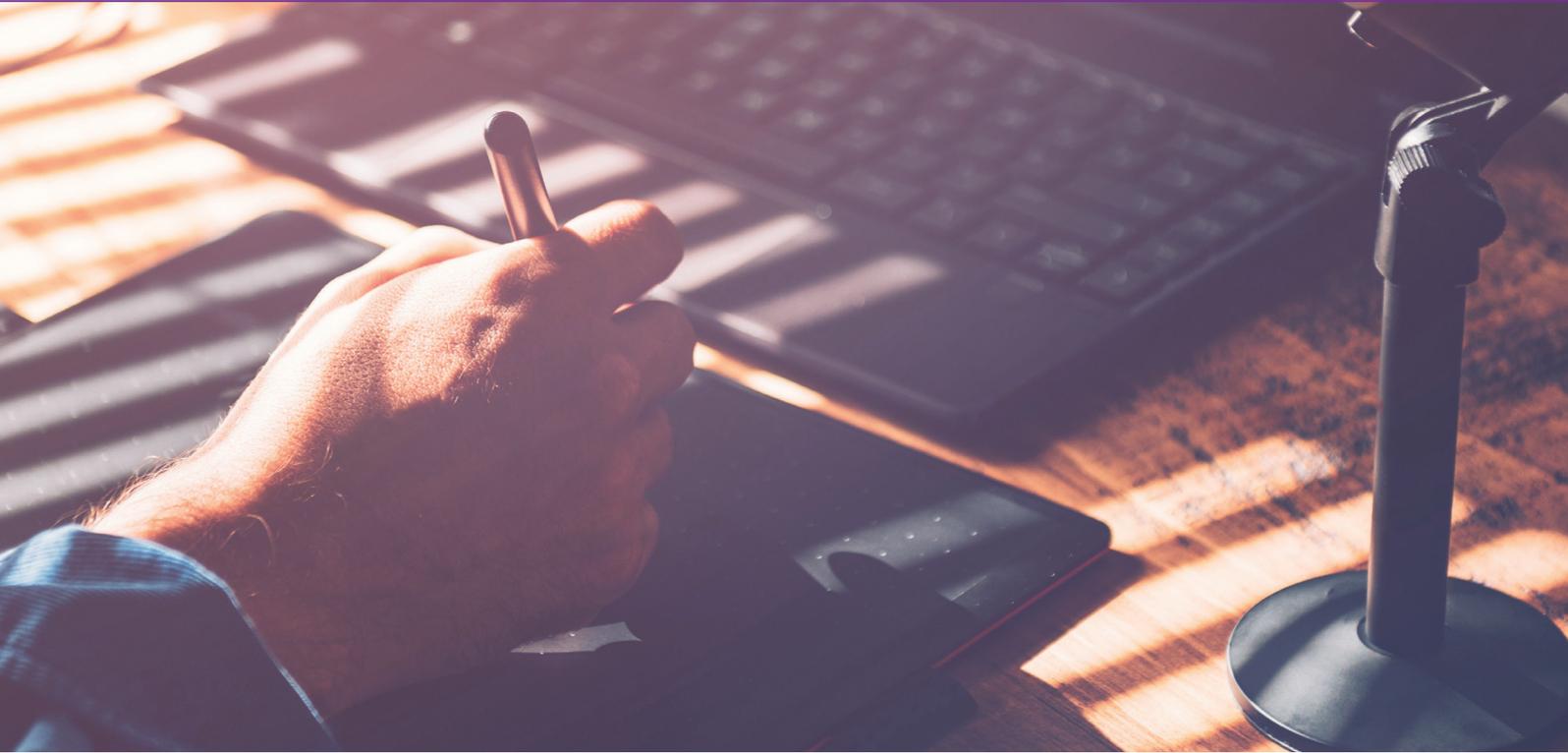
The portfolio can be used to support appraisals, as well as personal and professional development. It also supports and facilitates revalidation. Revalidation helps nurses, nurse associates and other health professionals to demonstrate that they are able to practise safely and effectively. It can help encourage a culture of sharing, reflection and improvement and is a continuous process throughout professional careers. Revalidation is about promoting good practice across the whole population of nurses and nursing associates, as well as strengthening public confidence in the nursing profession (Nursing and Midwifery Council, 2021).

Online modules

The e-learning modules have been designed to be completed as part of each level of the competency framework. Developed by experts, they provide a mixture of didactic learning, reflection and interactive activities. The nine current modules are hosted on the eLearning for Health platform at www.e-lfh.org.uk. They cover a range of essential topics, including:

- Consent
- Decontamination
- Diathermy
- Improving quality and safety
- Infection control
- JETSW eportfolio

Ostomy Webinars: Working with stoma patients to address their needs



The power to take full control of life after stoma formation - Available on-demand now

Natasha Rolls, Lead Stoma Care Nurse Specialist, University Hospitals Bristol NHS Foundation Trust

This webinar explores the presenter's experience of designing a best-practice pathway to provide patients with the power to take control of life after stoma formation. At each stage, this interactive session involved the audience and drew on conversations with patients who have first-hand experience of being on this pathway – which was co-authored by the presenter as part of a taskforce to raise the profile of stoma care nurses.

Easy intimacy and restful sleep, free from ostomy interruption - Available on-demand now

Amanda Gunning, Lead Stoma Care Nurse, Royal Devon and Exeter NHS Trust

This webinar endeavoured to explore how having a stoma affects intimacy and sleep patterns, based on the presenter's understanding of patient expectations before stoma-forming surgery, as well as their experiences after. Major surgery can have significant physical and psychological impacts on every aspect of a person's life, and this webinar aims to give specialist stoma care nurses the necessary confidence to address them.

The freedom to show off a stoma or keep it discreet - Available on-demand now

Meg Tremayne, Lead Stoma Care Nurse, Royal Cornwall Hospitals NHS Trust

Stoma formation can have a profound impact on an individual's body image and sense of self-worth. This webinar explores how stoma care nurses can support their patients by helping them to develop resilience, confidence and bravery.

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Box 1. JETSW competency levels**Level 1 competencies****Foundation**

- 1.1 Professional values and interpersonal effectiveness
- 1.2 Communication and patient assessment
- 1.3 Upper GI endoscopy (gastroscopy)
- 1.4 Lower GI endoscopy (colonoscopy and flexible sigmoidoscopy)
- 1.5 Infection prevention

Decontamination

- 2.1 Decontamination: flexible endoscope manual cleaning
- 2.2 Decontamination: flexible endoscopes and automated endoscope reprocessors
- 2.3 Decontamination: storage of flexible endoscopes and accessories
- 2.4 Preparation of the procedure room
- 2.5 Assisting with diagnostic upper GI endoscopy
- 2.6 Assisting with diagnostic and simple polypectomy (<1 cm) and lower GI endoscopy (colonoscopy and flexible sigmoidoscopy)
- 2.7 Operation of diathermy
- 2.8 Nurse pre-assessment of patients undergoing diagnostic gastroscopy, flexible sigmoidoscopy and colonoscopy with/without biopsy/polypectomy
- 2.9 Nurse confirmation of written consent for diagnostic gastroscopy, flexible sigmoidoscopy and colonoscopy with/without biopsy/polypectomy

Level 2 competencies***Advanced endoscopy**

- 3.1 Care of patients undergoing complex therapeutic upper GI endoscopy
- 3.2 Care of patients undergoing complex therapeutic lower GI endoscopy
- 3.3 Care of patients undergoing placement of enteral feeding tubes
- 3.4 Care of patients undergoing endoscopic retrograde cholangiopancreatography
- 3.5 Assisting with complex therapeutic upper GI endoscopy
- 3.6 Assisting with endoscopic mucosal resection
- 3.7 Assisting with colonic stent placement
- 3.8 Assisting with endoscopic submucosal dissection
- 3.9 Assisting with placement of enteral feeding tubes
- 3.10 Assisting with endoscopic retrograde cholangiopancreatography

Level 3 competencies**Management and leadership**

- 4.1 Endoscopy unit management
- 4.2 Team leadership
- 4.3 Clinical leadership
- 4.4 Teaching
- 4.5 Audit and use of data

Assessing clinical practice

- 5.1 Assessing clinical practice
- 5.2 Giving constructive feedback

Note: GI=gastrointestinal; JETSW=JAG Endoscopy Training System Workforce programme; *in development

- Patient pre-assessment
- Patient-centred care
- Professional issues
- Role of the assistant

Online training course

An online training course (ENDO1) has been developed to support the endoscopy workforce and complement the e-learning modules. This will be of benefit to both new and experienced

staff. The course is mandatory for those wishing to complete level one (foundation and decontamination) of the JETSW programme. Delegates registering for ENDO1 should have already completed the nine JETSW e-learning modules.

Led by experts, ENDO1 consists of a 2.5-hour online session that focuses on reviewing the learning in level 1. It summarises the key elements, gives an opportunity for small group discussion

(sessions are for 10–14 delegates) and provides standardised consistent learning. Feedback on ENDO1 so far has been exceptional. Feedback from delegates includes:

‘Very informative and clear. Very useful discussion. The session covered all relevant topics useful for practice at work.’

‘Fantastic virtual study day. Very well organised and easy to access and take part. Enjoyed very much and look forward to JAG organising other dates.’

And faculty have commented:

‘I have to say, I think, going forward, I will enjoy this content and layout better than face to face!’

Getting involved

UK professionals working in endoscopy can join the 200 services across the UK currently benefiting from the programme. Those at JAG-registered services have free access to JETS Workforce, and all NHS staff are able to access e-learning. Non-NHS staff working in private services and or abroad can access e-learning via OpenAthens or e-Integrity.

To get started on the competencies, those new to endoscopy can register for an account on the JETSW website (JAG, 2021b). The account of anyone enrolled in the former GIN programme has likely been deactivated, and they will need to contact askjag@rcplondon.ac.uk to reactivate and get access. Those seeking further information should also email the same address.

GIN

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Nursing and Midwifery Council. Welcome to revalidation. 2021. <http://revalidation.nmc.org.uk/welcome-to-revalidation.1.html> (accessed 9 March 2021)



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The impact of wearing an abdominal corset to achieve compression on colonoscopy outcomes: a randomised controlled trial

Abstract

Aim: This study aimed to evaluate the effect of abdominal corset use on colonoscopy outcomes in patients undergoing colonoscopy. **Methods:** This randomised controlled trial was conducted between March 2019 and January 2020, with the participation of 60 patients who underwent colonoscopy in the endoscopy unit of a university hospital. Half (n=30) of these patients were included in the experimental group and wore an abdominal corset during colonoscopy. **Findings:** It was determined that there was no statistically significant difference between the groups according to variables, including caecal intubation time (p=0.371), the need for position change in the colonoscopy process (p=0.554), position change in caecum imaging (p=1.000) and manual abdominal compression during the procedure (p=0.091). **Conclusions:** The results of this study reveal that abdominal corset usage does not provide a significant extra benefit compared with conventional colonoscopy in improving colonoscopy outcomes.

Zeynep Kızılcık Özkan, Research Assistant; **Ümmü Yıldız Fındık**, Professor of Health Sciences; **Doğan Albayrak**, Assistant Professor of Medicine, all at Trakya University, Edirne, Turkey
zeynepkizilcik26@hotmail.com

Key words

- Abdominal compression
- Abdominal corset
- Caecal intubation time
- Colonoscopy
- Patient

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Colonoscopy is an invasive endoscopic procedure used to detect and resect cancerous or pre-cancerous polyps and lesions, helping to prevent colorectal cancer and reduce its mortality (Rex et al, 2015). A full colonoscopy involves advancing a colonoscope along the length of the colon, ideally reaching the end of the colon (caecum) and capturing high-quality images of the entire colon (Figure 1) (Fernández-Urien et al, 2017; Kaminski et al, 2017). Outcomes used to measure the success of colonoscopy include:

- Adenoma detection rate (ADR)
- Caecal intubation rate (CIR)
- Caecal intubation time (CIT).

Essential ancillary interventions to achieve these include ensuring distention of the colon, positioning the patient and providing abdominal compression (East et al, 2007).

Abdominal compression is a technique that can contribute to the easy advancing of the

colonoscope, thus providing loop and pain control and facilitating access to the caecum. In a colonoscopy, abdominal compression can be achieved manually (by hand) or by using medical devices that provide compression, such as an abdominal compression device or abdominal corset (Prechel et al, 2005; Toros et al, 2012; Crockett et al, 2016). During the procedure, manual external abdominal compression is applied to the area where the colonoscope passes by nurses, with the direction of the endoscopist when needed. Safe and effective application of abdominal compression requires that the nurse has sufficient muscle strength and takes the appropriate position to repeat the movements (Prechel et al, 2009). Failure to use the appropriate technique to perform manual compression, including improper use of body mechanics, can result in injuries and other problems (Yu et al, 2018).

An abdominal corset is an elastic bandage worn around the abdomen. It is typically used

after abdominal surgery to protect the integrity of sutures extending from the ribs, as well as to support the incisional region by providing immobilisation (Drugs, 2020).

Studies investigating the efficacy of abdominal compression on reducing CIT have variously reported that they are effective (Toros et al, 2012; Toyoshima et al, 2020) and are not effective (Toyoshima et al, 2017; Kojecký et al, 2019). However, it has also been reported that there is no homogeneity in the applications of ancillary manoeuvres and that their effects vary (Hathorn et al, 2014).

Aims

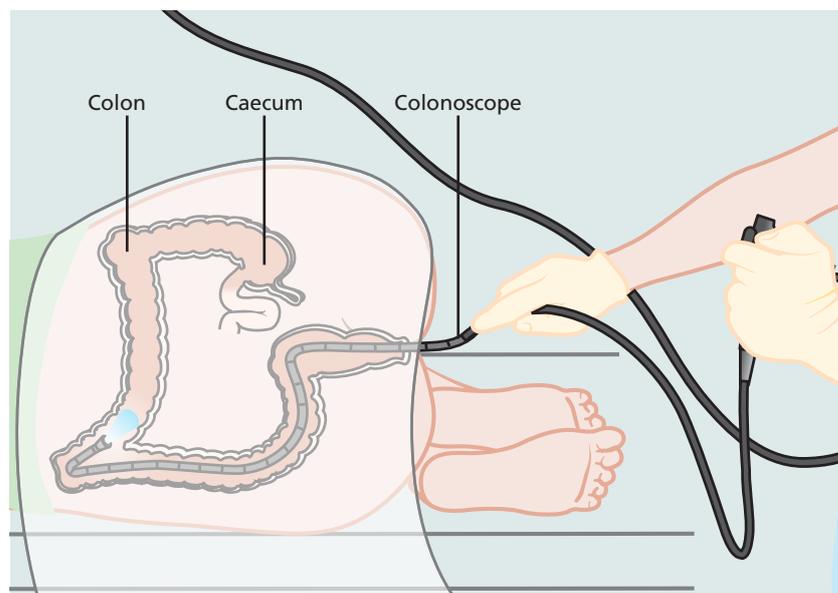
This study aimed to evaluate the impact of using an abdominal corset in patients undergoing colonoscopy on three colonoscopy outcomes: need for position change, need for manual abdominal compression and CIT. The hypothesis of the study was that corset use would have an effect on these outcomes. The primary endpoint of the study was to determine the effect of the abdominal corset on CIT, and the secondary endpoint was to determine what factors may have influenced the CIT.

Methods

Settings and design

This randomised controlled trial (RCT) was conducted between March 2019 and January 2020. Participants were recruited from patients in the endoscopy unit of a university hospital in Edirne province, Turkey. The study included patients who were over 18 years of age and undergoing elective total colonoscopy in the general surgery department. It excluded those who had a body mass index (BMI) of ≥ 40 , an abdominal circumference of ≥ 114 cm and/or problems communicating in Turkish (Crockett et al, 2016).

The CIT in patients in whom abdominal compression device was used during colonoscopy was reported to be 4.38 min (Crockett et al, 2016). In line with these findings, at a 95% confidence level, 5% tolerance rate and 80% power, the minimum number of people who should be sampled with power analysis was calculated to be 48, with 24 people in each group. The sample included 60 patients, who, as they entered the unit, were alternately randomised into an experimental group and a control group, both of 30 participants (Figure 2).



Cancer Research UK

Figure 1. Colonoscopy

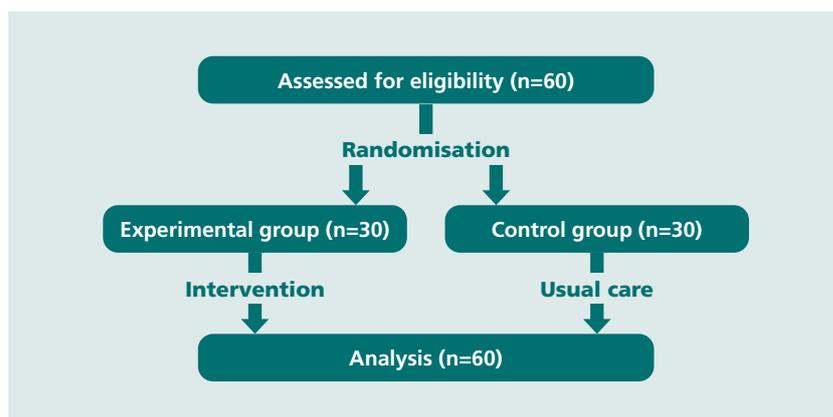


Figure 2. Study flow diagram

Procedure

All patients underwent standard bowel preparation (3 days of a liquid diet, consisting of apple juice, tea and filtered meat/chicken broth soup), two fleet phospho-sodas (33 ml) and two rectal fleet enemas (45 ml). Conscious sedation (using propofol) was performed by the anaesthesiologist during the procedure. Colonoscopy was performed by the same team to all patients. The team included a single experienced endoscopist, two nurses, a technician and an anaesthetist. The Fujinon brand monotype adult colonoscopy device was used in the procedure. Before the procedure, the patient was put in the left lateral decubitus position. When needed, a change of position or manual compression was applied by a nurse at the request of the physician. Air insufflation was applied in all procedures.

The experimental group wore a non-disposable abdominal corset produced from a viscoelastic fabric that was designated as appropriate for patients with a BMI below 40 and an abdominal circumference below 114 cm. Patients were given an abdominal corset in one of four sizes (70–80 cm, 80–90 cm, 90–100 cm or 100–110 cm), as recommended by the manufacturer.

Data collection

A patient information form and colonoscopy information form were used to collect the study data. The patient information form consisted of four questions collecting data on four variables: age, sex, weight and height. The colonoscopy information form was prepared by the researchers in accordance with the literature (Crockett et al, 2016; Yu et al, 2018). The form contained six questions about the procedure, covering:

- Indication
- Bowel preparation quality
- CIT
- Need for position change during intubation
- Need for position change during caecal imaging
- Need for manual abdominal compression during the procedure.

On the day of the procedure, patients attending the endoscopy unit for a colonoscopy were given information about the study and asked the questions on the patient information form. Patients in the experimental group, after being taken to the procedure room, were provided with an abdominal corset to wear by the endoscopy nurse. They were placed in the supine position and asked whether the abdominal corset applied pressure without disturbing them. If this was confirmed, the procedure was started by placing the patients in a left lateral decubitus position.

The researcher recorded the data included in the colonoscopy information form by following the procedure. CIT was considered to be the time that it took for the end of the colonoscope to pass from the anus to a point close to the ileocaecal valve and to show the caecum and appendiceal orifice. CIT was measured using a stopwatch and recorded on the form. After caecal intubation, the corset was removed. The anaesthesiologist was asked about which and how much pharmacological agent was used for conscious sedation during the procedure, and the endoscopist was asked about the quality of bowel preparation. These details were recorded on the form.

Statistical analysis

Data were analysed using the SPSS 22.0 package (IBM) programme. Whether the data were normally distributed was determined by the Shapiro-Wilk test. Student's t-test, the chi-square test, and Fisher's exact test were used to compare the data. Statistical significance was set at $p < 0.05$.

Ethical approval

The study objective was disclosed to all participants, who gave their written informed consent to volunteer. Before the study, consent for the study was obtained from the Trakya University Ethics Committee for Scientific Research (8 April 2019, number 2019/172, decision 07/24).

Results

The mean age of participants was 57.3 ± 14.1 (18–93) years, and 52% ($n=31$) of them were women. The experimental and control groups were determined to be similar according to their individual variables ($p > 0.05$) (Table 1).

It was determined that there was no statistically significant difference between the groups according to colonoscopy outcomes, such as the need for position change during intubation ($p=0.554$), the need for position change during caecal imaging ($p=1.000$), the need for manual abdominal compression during the procedure ($p=0.091$) and CIT ($p=0.371$) (Table 2).

In the subgroup analyses, no statistically significant difference was determined in CIT between the groups according to age ≥ 65 years, sex, BMI ≥ 30 , history of abdominal surgery or $p > 0.05$ (Table 3).

Table 1. Patient characteristics by group (n=60)

| Variable | Experimental | Control | p value* |
|-------------------------------------|--------------------|-------------------|----------|
| Age (years), mean \pm SD | 57.76 \pm 12.59 | 56.83 \pm 15.72 | 0.801 |
| Sex, n (%) | Female 16 (53.3) | 15 (50) | 0.796 |
| | Male 14 (46.7) | 15 (50) | |
| BMI, mean \pm SD | 28.04 \pm 4.51 | 25.34 \pm 3.99 | 0.424 |
| BMI, n (%) | <30 23 (76.7) | 27 (90) | 0.166 |
| | ≥ 30 7 (23.3) | 3 (10) | |
| History of abdominal surgery, n (%) | Yes 14 (46.7) | 16 (53.3) | 0.609 |
| | No 16 (53.3) | 14 (46.7) | |

Note: BMI=body mass index; SD=standard deviation; *t-test or Chi-square test

Discussion

In the study, abdominal corset usage was observed to not change the need for position change during intubation or caecal imaging. Likewise, Toyoshima et al (2020) reported that a back brace support belt did not reduce the frequency of position change, while Crockett et al (2016) stated that the device did not affect the need for position change during the colonoscopy procedure in patients in whom an abdominal compression device was used. However, studies evaluating the efficacy of medical devices that provide compression in colonoscopic procedures without sedation (Toros et al, 2012; Yu et al, 2018) have found that the use of an obstetric binder and abdominal corset reduced the need for position change during the procedure. Since sedation is known to reduce the rate of patient position change in colonoscopy procedures (Crockett et al, 2016), it can be said that medical devices providing abdominal compression do not reduce the need for position change in colonoscopy performed with sedation, and the hypothesis of this study is rejected.

In this study, abdominal corset use was found not to change the need for manual abdominal compression during the procedure. Likewise, a study by Runge et al (2015) determined that the need for manual compression was similar in patients using and not using an abdominal compression device. Other studies (Crockett et al, 2016; Toyoshima et al, 2020) also stated that medical devices providing compression did not have superiority in reducing the need for extra manual compression. The results of the studies support the findings of this study that its hypothesis should be rejected.

In this study, whether a patient used an abdominal corset was found not to have a significant impact on CIT. This reflects the results of a number of other studies on patients undergoing colonoscopy, in which CIT was determined not to be affected by an abdominal bandage (Tsutsumi et al, 2007), an abdominal compression device (Runge et al, 2015; Crockett et al, 2016), pillows for abdominal compression (Hartman and Cronin, 2016), abdominal banding (Kojecky et al, 2019) or a back brace support belt (Toyoshima et al, 2020). Meanwhile, Hsieh et al (2010) found no difference in CIT between the groups in which abdominal compression was applied by patients

Table 2. Colonoscopy outcomes (n=60)

| Variable | | Experimental | Control | p value* |
|--|-----|--------------|-----------|----------|
| Position change during intubation, n (%) | Yes | 2 (6.7) | 1 (3.3) | 0.554 |
| | No | 28 (93.3) | 29 (96.7) | |
| Position change during caecal imaging, n (%) | Yes | 1 (3.3) | 1 (3.3) | 1.000 |
| | No | 29 (96.7) | 29 (96.7) | |
| Manual abdominal compression, n (%) | Yes | 24 (80.0) | 18 (60.0) | 0.091 |
| | No | 6 (20.0) | 12 (40.0) | |
| Caecal intubation time (mean±SD) | | 4.02±1.58 | 3.68±1.33 | 0.371 |

Note: SD=standard deviation; *t-test or Chi-square test

Table 3. Caecal intubation time by patient characteristics, mean ±SD (n=60)

| Characteristic | n (%) | Experimental | Control | p value* | |
|------------------------------|--------|--------------|-----------|-----------|-------|
| Age (years) | <65 | 40 (66.7) | 4.03±1.47 | 3.42±1.22 | 0.277 |
| | ≥65 | 20 (33.3) | 4.01±1.86 | 4.19±1.47 | 0.395 |
| Sex | Female | 31 (51.7) | 3.76±1.72 | 3.55±1.40 | 0.361 |
| | Male | 29 (48.3) | 4.32±1.41 | 3.80±1.30 | 0.361 |
| BMI | <30 | 50 (83.3) | 3.90±1.52 | 3.73±1.37 | 0.388 |
| | ≥30 | 10 (16.7) | 4.42±1.81 | 3.21±1.09 | 0.350 |
| History of abdominal surgery | Yes | 30 (50.0) | 4.29±1.92 | 4.07±1.56 | 0.409 |
| | No | 30 (50.0) | 3.79±1.22 | 3.22±0.86 | 0.411 |

Note: *t-tests Chi-square test or Fisher's exact test

themselves with minimal sedation and in which compression was applied by the assistant physician during the procedure. The results of this and these other studies evidence that the devices used to provide abdominal compression do not have a significant effect on CIT, and the central hypothesis is rejected.

Other studies have reported factors that do affect CIT, including patient age, patient sex and the skill of the endoscopist (Schulman et al, 2017). In this study, some of these factors that might have affected CIT were examined independently of the effect of abdominal corset. Subgroup analysis found that the patient's age, sex, BMI and history of abdominal did not have a statistically significant effect on CIT. Similarly, in a study by Schulman et al (2017), subgroup analyses revealed no significant difference according to age and sex. Meanwhile, Other studies on the effects of medical devices providing compression also involved subgroup analyses that determined that CIT was not affected by age (Crockett et al, 2016; Schulman et al, 2017), sex (Crockett et al, 2016; Schulman et al, 2017; Toyoshima et al, 2020) or BMI (Schulman et al, 2017; Toyoshima et al, 2019).

In a systematic review and meta-analysis by Jaruvongvanich et al (2018), history of abdominal surgery was not significantly associated with CIT. However, Toyoshima et al (2020) stated that using a back brace support belt was beneficial in reducing CIT in colonoscopy in patients over 45 years of age. Crockett et al (2016) stated that an abdominal compression device was beneficial in reducing CIT in patients with BMI ≥ 30 , and Runge et al (2015) stated that an abdominal compression device was beneficial in reducing CIT in colonoscopy procedures performed by senior endoscopists in patients with BMI ≥ 30 . The results of these studies and the present study are inconclusive as to the effect of age, sex and BMI on CIT.

Limitations and strengths

The study was limited by its relatively small sample size. Moreover, the use of sedation in all patients meant that the effect of abdominal corset use in unsedated patients was not examined.

Data were collected by an observer, and the probability of error was minimised. All colonoscopies were performed under sedation by senior and independent endoscopists. Additionally, no adverse events or suspected adverse reactions were observed in this study.

Conclusion

The results of this study reveal that abdominal corset use does not provide extra benefit compared with conventional colonoscopy in improving outcomes. New studies should be planned and implemented to determine the effectiveness of compression-providing medical devices on colonoscopy outcomes. **GN**

Declaration of interest None

Acknowledgement The authors thank the endoscopy nurses who supported the research and the patients who participated in the study

Ethical statement The research conforms to the provisions of the Declaration of Helsinki. All participants gave informed consent for the research, and that their anonymity was preserved. The necessary written permissions were obtained from the Trakya University Medical Faculty Scientific Research Ethics Committee (date: 08.04.2019, no:2019/172, decision: 07/24).

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CPD reflective questions

- What methods can be used to achieve abdominal compression for colonoscopy?
- What, if any, benefits do abdominal corset use provide compared to conventional colonoscopy in improving colonoscopy outcomes?
- What other compression-providing medical devices could be assessed to determine their impact on colonoscopy outcomes?

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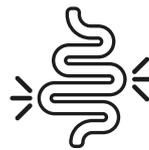
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A standardised patient education programme for peptic ulcer patients: impact on quality of life and medication adherence

Abstract

Background: Peptic ulcers can have a major negative impact on patients' quality of life (QoL), especially if patients do not adhere to prescribed medication. **Aim:** This study was carried out to investigate the impact on QoL and adherence of an educational programme for peptic ulcer patients, delivered by a variety of methods. **Methods:** The population in this single-blind randomised control experimental study included 120 peptic ulcer patients randomly assigned to four groups. Data were collected using the Gastrointestinal Patients' Quality of Life Index and the Morisky Medication Adherence Scale. **Findings:** A significant increase was observed in the mean scores related to QoL ($p=0.001$) and medication adherence ($p=0.003$) compared with the control group after the educational intervention in the intervention groups. One-way ANOVA test for four independent groups indicated a significant difference between the mean scores related to QoL and medication adherence in the four groups after the intervention ($p<0.05$). In addition, a significant difference was reported in the mean score changes before and after the intervention in QoL and medication adherence between messenger group and face-to-face, web and control groups. **Conclusions:** Although all three methods of face-to-face, web-based and messenger-based education improved the QoL and medication adherence in peptic ulcer patients, the last method enhanced these patient-related outcomes more effectively than the other two.

Sara Fahimi, Master's Student; **Maryam Allahbakhshian**, Assistant Professor; **Amir Sadeghi**, Gastroenterologist and Assistant Professor, all at Shahid University of Medical Sciences, Tehran, Iran; **Atefeh Allahbakhshian**, Associate Professor, Tabriz University of Medical Sciences, Tabriz, Iran; **Malihe Nasiri**, Assistant Professor, Shahid Beheshti University of Medical Sciences, Tehran, Iran
mallahbakhshian@gmail.com

A peptic ulcer is a sore or fissure in the stomach, oesophagus or proximal ileum (Ghahramani et al, 2009). Around 6–15% of individuals in any community will be diagnosed with a peptic ulcer in their lifespan, potentially affecting 4 million people worldwide each year (Salemi et al, 2013). Peptic ulceration is considered a multifactorial disease. Gastric ulcer is regarded as the most common reason for upper gastrointestinal bleeding and perforation, which have a high mortality (Sung et al, 2009).

Peptic ulcers are often recurrent, and they present with symptoms such as indigestion, upper abdominal pain, feeling full, nausea, flatulence, weight loss, iron-deficiency anaemia,

anorexia and faecal occult blood (melaena) (Kalantari and Nourian, 2011). Patients often also experience: pain when eating; fatigue and difficulty in concentrating during the day; and difficulty sleeping at night, all of which decrease the quality of life (QoL) and workplace productivity (Barkun and Leontiadis, 2010). Therefore, improving QoL is one of the most important objectives in caring for and treating chronic diseases, such as peptic ulcers (Hemmati Maslakkpak and Shams, 2015).

Evidence suggests that patients with chronic diseases, including gastrointestinal conditions, often fail to adhere to their medication and treatment regimens, which can lead to adverse

consequences, such as relapse and the need for treatment and hospitalisation (Lee et al, 2017). A large number of studies have suggested that treatment failure due to patients' non-adherence to the medication regimen is often a result of insufficiencies in knowledge, skills and/or support systems during treatment (Levy and Feld, 1999).

Therefore, adherence may be greatly improved by appropriate educational interventions (Coté et al, 2008). Patient education is an important aspect of nursing care. It can equip patients with new skills and knowledge of how to apply them correctly, thus empowering self-care, decreasing disease side-effects and improving QoL, medication adherence and treatment outcomes (Lundy and Janes, 2009; Shin et al, 2015; Baraz et al, 2017).

Patient education can be delivered using a variety of different modalities, each of which has advantages and disadvantages (Table 1).

Face-to-face delivery is the most established, popular and common method of conveying educational messages to patients (McCutcheon et al, 2015). Some studies indicate that face-to-face communication is particularly effective at encouraging patients to change their behaviour; however, it can be time-consuming and unsuitable for certain environments, such as in a crowded hospital or during a pandemic (Hemmati Maslakpak et al, 2017).

Remote delivery has been made increasingly viable due to technological advancement and the proliferation of personal computers and smartphones with internet access health information, education and interventions, and it has been gaining in popularity in recent years, particularly during the COVID-19 pandemic (Cook et al, 2010). There are a variety of remote delivery methods, including web-based delivery, involving accessing a website through an internet browser, and messenger-based delivery, involving an instant-messaging application, such as WhatsApp (Steele et al, 2015). Evidence suggests that remote delivery can be comparatively quick, efficient and affordable (Ellaway and Masters, 2008; Tate et al, 2009), and it can overcome some of the obstacles associated with traditional education (Garg et al, 2016; Lawn et al, 2017). Remote delivery that focuses on the patient and conveys information clearly can facilitate high levels of patient interaction and successful mastery of

complex concepts, potentially leading to positive changes in behaviour and more effective disease management (Chao et al, 2016).

Aim

The present study aims to improve the care of peptic ulcer patients by assessing the effect of educational interventions using face-to-face, web-based and messenger-based education on QoL and medication adherence. This will address a lack of interventional studies on this topic in the literature on peptic ulcers.

Methods

Participants

This single-blind randomised control experimental study was conducted from June to October 2019. Participants were recruited from patients in the gastrointestinal wards of two large public hospitals in Iran, both of which took a large number of referrals from across the country and had similar treatment protocols.

All participants had a definite diagnosis of peptic ulceration following endoscopy, were

Key words

- Peptic ulcer
- Quality of life
- Medication adherence
- Patient education
- Telehealth

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Table 1. Advantages and disadvantages of educational delivery methods

| Method | Potential advantages | Potential disadvantages |
|--------------------------|--|--|
| Face-to-face delivery | <ul style="list-style-type: none"> • Clinician–patient interaction • Immediate feedback • Knowledge exchange • Learner motivation • Skill development • Socialisation | <ul style="list-style-type: none"> • Accessibility • Classroom size • Cost of delivery • Instructor-centric approach • Student–teacher ratio • Time and location constraints |
| Web-based delivery | <ul style="list-style-type: none"> • Availability to global audience • Convenience for instructors • Cost efficacy for learner • Knowledge sharing • Multimedia learning content • Permanent availability • Promotion of learner autonomy • Time and geographic flexibility • Unlimited access to knowledge | <ul style="list-style-type: none"> • Cost • Frequently higher rate of abandonment • Lack of immediate feedback • Minimal social interaction • Requirement for computer literacy • Requirement for new skills |
| Messenger-based delivery | <ul style="list-style-type: none"> • Encouragement of higher-level thinking • Learner-centric approach • Active learner engagement • Increased learner confidence • Development of problem-solving skills • Formal and informal learning • Collaborative environment | <ul style="list-style-type: none"> • Time-consuming nature • High cost • Potential complexity to install, configure and customise • Limited sophistication of tools |

aged 18–65 years and were willing to participate in the study. They also had no other acute physical or mental illnesses affecting QoL and no severe visual and auditory impairments.

Random convenience sampling was used to select 120 participants. Using random allocation, Rand-List and a ratio of 1:1, they were equally divided into four (control, face-to-face, web and messenger) groups.

All participants were blinded to the nature of the intervention; completion of forms and questionnaires, explanation of research objectives and education were all conducted individually and separately for each participant, and they were not told which intervention group they belonged to. None of the members of the control group had any contact with patients who were members of the intervention groups or had otherwise received one of the interventions.

Intervention

All three intervention groups underwent the same standardised patient education programme. The content of this programme was based on a needs assessment of 30 peptic ulcer patients and the expert recommendations of gastroenterology, nutrition and medical consultants, and it incorporated topics related to disease diagnosis, treatment and lifestyle management (Table 2). How this programme was delivered differed depending on the group:

- For the face-to-face group, the programme was presented by the researcher at the patient's bedside, which took 20–30 minutes
- For the web group, the programme was presented in text, audio and video formats hosted on a website, and patients were sent a link to the website via text message, along with reminders to visit it three times a week for 3 weeks

■ For the messenger group, the programme was also presented in text, audio and video formats, but these were sent directly to the patients using WhatsApp, along with instructions to respond to an online question-and-answer form within 3 weeks.

■ The control group was not presented with the new educational programme during the study and instead received usual hospital-based educational interventions. However, after the study period, it was provided with the new programme, via face-to-face or remote delivery.

Questionnaires

The study used three questionnaires. One questionnaire collected demographic information, including age, sex, education level, employment status, monthly income, diagnosis duration, onset age, family illness, smoking habits, medication use and insurance.

Another was the Gastrointestinal Quality of Life Index (GIQLI) (Ortega et al, 2012), which measures gastrointestinal patients' QoL in four areas: mental wellbeing, physical wellbeing, social function and symptoms. The 36-item GIQLI questionnaire scores each item 0–4 (0=always, 1=often, 2=sometimes, 3=rarely, 4=never), giving a total score of 0–144, with higher scores indicated a higher QoL (Eypasch et al, 1995). Cronbach's alpha value was calculated to be 0.87.

The other was the Morisky Medication Adherence Scale (MMAS) (Morisky and DiMatteo, 2011), a self-reporting instrument to measure adherence to a medication regimen. It is scored 0–8, with lower scores indicating greater adherence (0=high adherence, 1–2=medium adherence, ≥3=low adherence) (Morisky et al, 1986). The MMAS is validated for use in a large number of countries (Moharamzad et al, 2015), and the validity and reliability of the Persian version was assessed by Ghanei Gheshlagh et al (2015), using a Cronbach's alpha of 0.83.

Prior to the study, patients were given all three questionnaires to complete. At the end of the 3-week study, they received the QoL and medication adherence questionnaires to complete.

Data analysis

Data were analysed using SPSS 21. Descriptive statistics were then used to analyse the data,

Table 2. Content of educational intervention for peptic ulcer disease

| Week | Content |
|--------|--|
| Week 1 | Basic knowledge of peptic ulcer disease, including causes, symptoms and treatments, as well as introduction to researchers, explanation of study purpose and general outline of messages |
| Week 2 | Description of the endoscopic procedure and the necessary pre-and postprocedural care, as well as lifestyle adjustments, including stress management, risk reduction, problem solving and effective coping |
| Week 3 | Nutrition and medication in peptic ulcer disease |

providing numerical indices (mean, standard deviation and percentage), ANOVA test (for continuous variables, such as age) and the Chi-square test (for discrete variables, such as gender). In the next step, the Kolmogorov-Smirnov test was used to assess the normality of the data. The differences in the results of the groups at the start and end of the study were measured and compared using the ANOVA test. In the next procedure, Tukey's post hoc test was used to compare the mean QoL and adherence scores across the four groups. Finally, the results were observed for statistical significance ($p < 0.05$).

Ethical considerations

The present study was conducted in Shahid Beheshti University of Medical Sciences with the ethical code IR.SBMU.PHARMACY.REC.1398.123. All patients participated in the study voluntarily and did not incur any costs during the intervention. All eligible patients were given the objectives and process of the ongoing study by the researchers, verbally and in writing, and written consent was obtained from patients before participating in the study. The questionnaires were completed confidentially, and participants could withdraw from the study at any time.

Results

Of 120 selected participants, 114 (95%) completed the questionnaires 3 weeks after the intervention (Figure 1). Six failed to respond and so withdrew from the study (two each in the web and messenger groups and one each in the face-to-face and control groups). The demographic characteristics of the four groups were similar, and no significant differences were reported (Table 3).

The overall mean QoL score was 85.58 ± 9.94 . No significant differences in QoL scores were observed between the groups before the educational intervention ($p = 0.351$). After the intervention, mean QoL scores increased significantly in the intervention groups compared with the control group ($p = 0.001$). There were significant differences between mean QoL scores and two physical and psychological subscales in the four groups after the intervention ($p < 0.05$). There was a significant difference in the mean changes of scores before and after the intervention in QoL and the two psychological

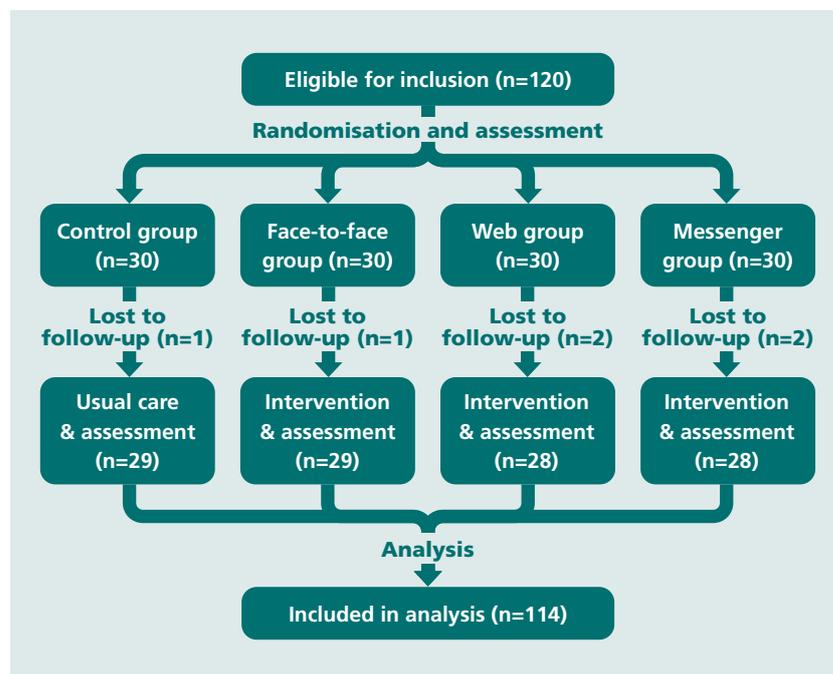


Figure 1. Consort diagram of study process

Table 3. Demographic characteristics of participants by group (n=114?)

| Variable | Face-to-face | Web | Messenger | Control | P | |
|---------------------------|----------------------|-----------|------------|------------|------|-------|
| Age (years), mean (SD) | 48 (12.09) | 41 (9.16) | 45 (10.07) | 46 (11.28) | 0.28 | |
| Sex, % | Male | 55.2 | 64.3 | 60.7 | 55.2 | 0.84 |
| | Female | 44.8 | 35.7 | 39.3 | 44.8 | |
| Marital status, % | Married | 69.0 | 71.4 | 67.9 | 55.2 | 0.63 |
| | Unmarried | 31.0 | 28.6 | 32.1 | 44.8 | |
| Education level, % | Primary school | 17.2 | 10.7 | 14.3 | 24.1 | 0.09 |
| | High school | 27.6 | 35.7 | 17.9 | 20.7 | |
| | Graduate degree | 31.0 | 28.6 | 32.1 | 31.0 | |
| Job status, % | Postgrad degree | 24.1 | 25.0 | 35.7 | 24.1 | 0.763 |
| | Employee | 41.4 | 42.9 | 42.9 | 48.3 | |
| | Self-employed | 17.2 | 35.7 | 21.4 | 10.3 | |
| Income, % | Homemaker/unemployed | 41.4 | 21.4 | 35.7 | 41.4 | 0.325 |
| | High | 17.2 | 14.3 | 21.4 | 13.8 | |
| | Moderate | 37.9 | 60.7 | 51.7 | 58.6 | |
| Health insurance, % | Low | 82.4 | 25.0 | 25.0 | 27.6 | 0.161 |
| | Yes | 89.7 | 82.1 | 89.3 | 82.8 | |
| Smoking, % | No | 10.3 | 17.9 | 10.7 | 17.2 | 0.35 |
| | Yes | 48.3 | 46.4 | 46.4 | 44.8 | |
| Family history, % | No | 51.7 | 53.6 | 53.7 | 55.2 | 0.26 |
| | Yes | 44.8 | 21.4 | 39.3 | 31.0 | |
| Duration of peptic ulcers | No | 55.2 | 78.6 | 60.7 | 69.0 | 0.158 |
| | ≥6 months | 62.1 | 71.4 | 78.6 | 58.6 | |
| | <6 months | 37.9 | 28.6 | 21.4 | 41.4 | |

and physical subscales between the messenger group and the face-to-face, web and control groups (Table 4, Table 5, Figure 2).

The overall mean adherence score was 3.4±1.4, indicating poor adherence among these patients. No significant difference was observed between the mean adherence scores of the four groups at the beginning of the study. By the end of the study, mean adherence scores had decreased in the face-to-face (3.10 to 2.90), web (3.03 to 2.30), messenger (2.53 to 1.33) and control (2.86 to 2.60) groups. This difference was significant for all four groups (p<0.0036). Finally, a significant difference was observed in the mean changes of adherence scores before and after the intervention between the messenger group and the face-to-face, web and control groups (Table 4, Table 5, Figure 2).

Discussion

This is one of the first studies concerning peptic ulcer patients to examine the delivery of the same educational material using face-to-face, web-based and messenger-based methods. Participants' mean QoL scores were particularly low for physical and psychological wellbeing, compared with other dimensions. Barkun and Leontiadis (2010) and Nadrian et al (2011) reported that peptic ulcer patients experience a low QoL due to severe pain. Joneja et al (2004) used the same instrument to examine the QoL of patients with perforated peptic ulcers and found that the symptoms experienced by gastrointestinal patients have a negative effect on their wellbeing and ability to enjoy daily activities, which decrease their QoL in both physical and mental dimensions.

Table 4. Mean quality of life and adherence by group, mean (SD)

| Variable | Time | Face-to-face | Web | Messenger | Control | p |
|---------------------------|--------|---------------|---------------|---------------|---------------|---------|
| Total quality of life | Start | 90.50 (10.01) | 80.96 (4.33) | 88.76 (9.38) | 89.10 (10.48) | 0.351 |
| | End | 110.33 (9.16) | 119.1 (9.22) | 124.50 (7.96) | 89.60 (9.85) | 0.001* |
| | Change | -19.83 (9.56) | -38.14 (8.86) | -35.74 (8.63) | -0.5 (9.97) | 0.001* |
| Physical quality of life | Start | 15.70 (4.11) | 14.43 (3.67) | 15 (13.37) | 15.23 (3.72) | 0.226 |
| | End | 18.56 (3.97) | 18.50 (3.55) | 20.06 (2.81) | 16.73 (3.37) | 0.0449* |
| | Change | -2.86 (4.02) | -4.07 (3.23) | -5.06 (4.38) | -1.5 (3.45) | 0.034* |
| Emotional quality of life | Start | 11.46 (5.58) | 12.10 (1.80) | 12.60 (2.23) | 11.70 (12.01) | 0.478 |
| | End | 14.23 (2.14) | 15.50 (2.35) | 17.28 (1.63) | 12.10 (2.26) | 0.031* |
| | Change | -2.77 (3.14) | -3.4 (1.98) | -4.68 (2.03) | -0.4 (2.96) | 0.0265* |
| Social quality of life | Start | 14.046 (2.33) | 12.70 (2.13) | 14.40 (2.11) | 13.40 (2.35) | 0.639 |
| | End | 15.80 (1.84) | 15.03 (1.77) | 16.20 (1.71) | 14.13 (1.88) | 0.119 |
| | Change | -1.754 (1.89) | -2.43 (1.75) | -1.8 (2.06) | -0.73 (2.05) | 0.248 |
| Symptom quality of life | Start | 48.30 (5.58) | 44.76 (4.33) | 44.91 (5.46) | 46.66 (5.65) | 0.563 |
| | End | 57.33 (4.41) | 60.80 (5.26) | 62.53 (3.87) | 51.23 (5.68) | 0.785 |
| | Change | 9.03 (4.87) | 16.04 (5.74) | -17.06 (4.11) | -4.57 (5.61) | 0.060 |
| Adherence | Start | 3.10 (1.90) | 3.03 (1.73) | 2.53 (1.83) | 2.86 (1.79) | 0.0703 |
| | End | 2.90 (1.44) | 2.30 (1.11) | 1.33 (1.18) | 2.60 (1.79) | 0.0031* |
| | Change | 0.2 (1.58) | 0.73 (1.19) | 1.2 (2.59) | 0.26 (1.86) | 0.015* |

Note: *Significant (p<0.05)

Table 5. Paired comparisons of changes in quality of life and adherence by group, mean (Tukey p)

| Group 1 | Group 2 | Quality of life | Physical quality of life | Emotional quality of life | Adherence |
|--------------|-----------|------------------|--------------------------|---------------------------|-----------------|
| Face-to-face | Web | 5.83 (0.680) | -0.4 (0.078) | -0.9 (0.0845) | 0.6 (0.074) |
| | Messenger | 14.17 (0.039)** | -2.04 (0.035)** | -2.2 (0.041)** | 1.57 (0.037)** |
| | Control | -20.73 (0.270) | -1.83 (0.671) | -2.22 (0.0960) | -0.3 (0.070) |
| Messenger | Web | 8.34 (0.011)* | 1.64 (0.035)** | 1.3 (0.023)** | -0.97 (0.049)** |
| | Control | -26.56 (0.050)** | -3.87 (0.041)** | -4.42 (0.035)** | 1.27 (0.025)** |
| Web | Control | -34.9 (0.02)* | -2.23 (0.536) | -3.12 (0.241) | 0.3 (0.065) |

In this study, the educational intervention significantly improved QoL, especially in the physical and psychological dimensions. This was the case for all three (face-to-face, web-based and messenger-based) delivery methods. However, the improvement in QoL was greater in the messenger group than in the other intervention groups. Compen et al (2018) found that both face-to-face and web-based education methods improved the QoL of cancer patients. Similarly, Naseri-Salahshour et al (2020) evaluated the impact of messenger-based education on haemodialysis patients and found that this educational method significantly increased QoL in this group. This may be because messenger-based education makes use of social networks that allow patients to communicate with each other. These networked patients can then provide peer support, share ideas about controlling disease-related symptoms and promote behaviours that lead to better health. The efficacy of messenger-based education may also be linked to a tendency among patients to use newer educational methods compared to traditional ones (Keulers et al, 2007).

The peptic ulcer patients in the present study had poor medication adherence. The results showed that these patients often abandoned their medication after their initial recovery from symptoms, and they had poor longer-term adherence to their prescribed medication regimen. Although no study on medication adherence rates has been conducted in peptic ulcer patients in particular, they have been shown to be low in other chronic patients who require long-term treatment. Lower adherence to treatment is associated with higher morbidity, repeat hospitalisation and mortality, as well as greater costs for the healthcare system and wider society (Thakkar et al, 2016).

Despite the low adherence to medication in this study, the intervention groups saw their mean adherence scores decrease from 2.88 before to 1.64 after the intervention. This suggests that the intervention increased patients' adherence and encouraged patients to take the right dose of medication at the right time during the treatment period. This increase was significantly more pronounced in the group delivering education via a messenger app than in those delivering it face-to-face or over the web. However, no significant difference in adherence

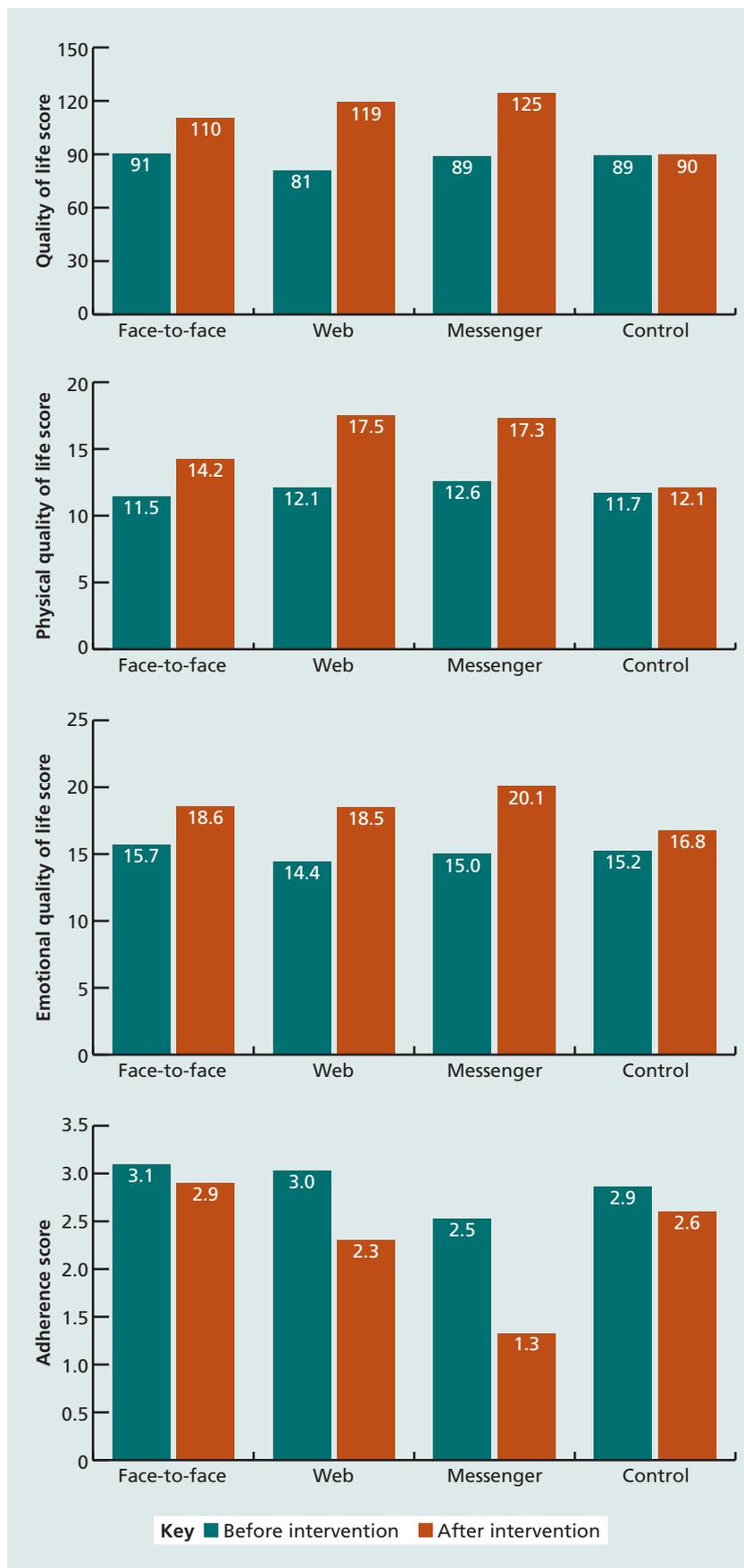


Figure 2. Impact of educational intervention on quality of life and adherence scores

CPD reflective questions

- In what way do peptic ulcers impact on quality of life?
- How can adherence be encouraged among your patient group?
- Is it more effective to deliver patient education face-to-face or remotely?

was observed between face-to-face or web group and the control group.

This is echoed by research in other patient groups. A study in psychiatric patients by Javadpour et al (2013) found that overall adherence to medication was poor but increased significantly after an educational intervention. A study in patients with myocardial infarction by Lee et al (2018) reported that an educational intervention had a positive effect on adherence. A study in systemic lupus erythematosus patients by Scalzi et al (2018) confirmed that a messenger-based educational intervention increased adherence. A study in patients with coronary artery disease by Tang et al (2018) showed that web-based and messenger-based educational interventions improved patients' awareness of risk factors and adherence to a healthy lifestyle. However, a study in multimedia rheumatoid arthritis by Unk and Brasington (2014) found no significant difference between messenger-based and brochure-based educational interventions in terms of medication adherence and treatment acceptance. The discrepancy between these results can be explained, because medication adherence is affected by a variety of factors, related to the patient, the disease and the healthcare team. This indicates the need for further studies in chronic diseases, including peptic ulcer patients.

This study evidences the potential of different educational and e-health technologies to motivate learning, improve patients' knowledge and provide them with skills, potentially promoting changes in behaviour. In particular, remote delivery is not only effective, but also more efficient in terms of time and manpower than other methods (Unk and Brasington, 2014).

Conclusions

This study showed that an educational intervention improved QoL and increased medication adherence in peptic ulcer patients, whether delivered face-to-face, over the web or via a messenger app. The increase in mean

QoL and adherence scores was higher in the messenger group than in the face-to-face and web groups, indicating the popularity and importance of social networks among patients. The potential of social networks can be used to educate patients and improve levels of health, making use of their popularity and widespread use.

Further research is needed to optimise interventions and increase the efficiency of these networks, although using networked messenger apps, such as WhatsApp and Telegram, is appropriate for improving or changing behaviour in the early stages of a diagnosis. The results of this study should guide nurses and physicians in care and treatment planning for peptic ulcer patients. **GN**

Declaration of interest None

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