

ORIGINAL PAPER

PREOPERATIVE STOMA SITE MARKING – NURSES' PERSPECTIVE

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Summary

Introduction: The purpose of the study was to determine Polish-based ostomy nurses' perceptions of the number of patients who have a stoma site marked.

Material and methods: Data were collected during 3 nationwide nursing conferences. The inclusion criterion was a declaration of direct work with a new stoma patient. The research group consisted of 164 nurses. The study was a cross-sectional assessment of the implementation of procedure for stoma site marking recommended in the Model of Care for Patients with Stoma. The study was based on the survey method using our own questionnaire and statistical methods.

Results: The results of the study show that 40% of the nurses surveyed work in surgical wards, where preoperative stoma marking is always performed for elective surgery. Thirty percent of respondents indicated that the procedure was performed only sometimes. The main reasons for not marking the stoma included the following: lack of the procedure on the ward, lack of trained personnel, a ban imposed by the surgeon, and lack of time. In the case of emergency surgery, the procedure was confirmed by 14.6% of respondents.

Conclusions: While the procedure of stoma site marking and its scientifically proven advantages are known, the implementation of that procedure into practice is still not satisfactory in Poland. Increasing the amount of training for ostomy nurses and raising awareness among surgeons could contribute to the widespread use of this procedure. The basic key for standardising preoperative stoma site marking will be to develop and introduce a uniform, national procedure.

Key words: intestinal stoma, stoma site marking, stoma nurse, nursing procedure.

Introduction

While the history of elective surgical creation of an intestinal stoma dates to the 18th century [1], the history of preoperative stoma site marking is much shorter, and its origins date back to the second half of the 20th century [2, 3]. Initially, the terms stoma placement or stoma location were used instead of the term stoma siting [4]. In 1967, Turnbull and Weakley described the basic principles of intestinal stoma creation, emphasising the appropriate location of the stoma as one of the necessary elements of colorectal surgery [2, 5]. In 1978, Kodner published a brochure on intestinal stomas, in which he also pointed out the importance of stoma location [6].

An important early citation is the chapter 'Stoma Placement', published in 1982, containing diagrams of

techniques for marking the stoma site and providing guidelines for stoma site marking [7]. The Wound Ostomy and Continence Nurses Society (WOCN) and the American Society of Colon and Rectal Surgeons (ASCRS) developed a collaborative statement on the importance and necessity of stoma site marking along with an outline of the procedure [8]. In the Ostomy and Continent Diversion Patient Bill of Rights the experts recommended preoperative stoma site marking by a certified medical professional as a one of main ostomy patients' right [9].

Stoma marking has been demonstrated to reduce peristomal and stomal complications [10]. Another study notes a reduction of rates of surgical site infections, lower rates of peristomal skin problems, and lower rates of parastomal hernias [11].

In Poland, the beginnings of stoma care are closely related to Professor Roman Góral, who initiated the Polish Ostomy Society POL-ILKO, opened the first clinic for stoma patients, and organised the first conference with a stoma session [12]. However, it is also difficult to find the exact date when the stoma site was marked for the first time in Poland in accordance with applicable guidelines. Scientific reports describing the principles of stoma site marking by a nurse-doctor team with the participation of a patient appeared at the beginning of the 21st century. As part of the prevention of peristomal skin complications and improving the quality of life of patients with a stoma, guidelines emphasise the importance of assessing the abdomen for stoma siting in 3 positions: lying, sitting, and standing [13, 14], and recommend avoiding areas with scars, skin folds, bone elevations, and the umbilicus [15, 16].

The Polish model of Ostomy Patient Care was published and recommended by the experts of Polish Club of Coloproctology in 2002. It contains recommendations for preoperative stoma site marking by nurses but does not describe the procedure [17]. Currently, there is no uniform, official stoma site marking document in Poland, describing the procedure for all hospitals where ostomy procedures are performed. Hospital departments develop and implement their own procedures based on current international recommendations and experience.

Polish nurse graduates of the specialist course Care for a Patient with an Intestinal Stoma receive education and then are qualified to mark stoma sites. To increase the awareness of nurses on the importance and skills needed to mark stoma sites, educational programs as well as workshops and conferences are held.

The main purpose of the study was to determine Polish-based ostomy nurses' perceptions of the number of patients who have a stoma site marked when undergoing elective surgery or emergency surgery. A secondary purpose was to determine the perceived factors contributing to the performance or non-performance of the stoma site marking.

Material and methods

The study was a cross-sectional assessment of the implementation of the preoperative procedure for stoma site marking in the workplace of the nurses surveyed. Participants of 3 national conferences on stoma care, which took place in 2017, were invited to participate in the study.

The inclusion criteria for the study were active practice as a nurse and direct work with a new ostomy patient in a hospital or out-patient clinic. The exclusion criterion was working in non-surgical departments or primary health care (the procedure of marking the stoma site is not performed there). Participation in the study was voluntary and anonymous. Study procedures were reviewed by the Independent Bioethics Committee for Scientific Research

at the Medical University of Gdańsk and deemed exempt from individual informed consent.

A questionnaire was used in the study. The questionnaire was developed based on the authors' own professional experience and clinical observations. The questionnaire was validated by an external expert (experienced stoma nurse). The questionnaire consisted of 3 parts. The first part was used to collect socio-demographic data, work experience, workplace, position, role in the ward, and qualifications in ostomy care nursing. The second part asked about the number of patients undergoing elective surgery who had stoma site marking performed, or the reason for lack of stoma site marking. In part 3, the same questions were related to emergency surgery. In total, the questionnaire contained 26 single and multiple-choice closed-ended questions. The questionnaire took about 10 minutes to complete.

Limitations

The 2 basic limitations may be the construction of a survey questionnaire containing only closed questions, and the research group. The study was conducted among nurses participating in scientific conferences, i.e. the study group consisted only of nurses actively raising their knowledge in the field of ostomy care, which may create a selection bias towards more educated practitioners. Furthermore, this study provides only limited insight into the impact of professional stoma education on stoma marking, due to its cross-sectional design. To fully investigate that matter a prospective cohort study or a randomised health services study are warranted. Finally, while the important issue of the surgeons' ban on stoma site marking was raised, no surgeons were surveyed. It would be of interest to elucidate the potential reasons for such a ban among physicians.

Clinical implications

Based on the analysis, we believe that the following should be done to disseminate and standardise preoperative stoma site marking:

1. Develop a uniform, national procedure as an element of preoperative preparation in hospitals for every colorectal patient that includes preoperative stoma site marking.
2. Increase the number of training events and verify the program of currently applicable courses in this field, so that they not only give nurses a qualifying certificate but also such knowledge and skills that would help nurses take responsibility for marking stoma sites.
3. Introduce training for surgeons to increase their awareness of the benefits of using the procedure and collaboration with a qualified nursing team.
4. Consider the possibility of performing the procedure as part of outpatient care before admission to the hos-

pital, especially in centres where there are no ostomy nurses or where there is too much workload and a lack of time to carry out the preoperative procedure for stoma site marking.

Data analysis

Data collection and analysis were completed using SPSS software, version 24 (SPSS Chicago IL) and Microsoft Excel 2010 (Microsoft Redmond WA). The χ^2 test of independence was used to assess the significance of the relationship between variables (factors) considered in the study. Associations between reference level of hospital and completion of stoma site marking procedure as well as nurses' qualifications and stoma site marking ban imposed by surgeons were assessed. Absolute *p*-values are reported alongside results.

Results

The study group (after excluding 4 nurses working in community care) consisted of 164 respondents working with stoma patients in hospitals and outpatient clinics throughout Poland. The average age of the respondents was 48.46 (SD 8.09) years, the average work experience was 26.85 (SD 9.27) years, and the majorities were women (97.6%). Most of the respondents had higher education ($n = 104$, 63.8%): 35% ($n = 57$) held a bachelor's degree in nursing and 28.8% ($n = 47$) held a master's degree in nursing. Slightly less than half ($n = 66$, 44.6%) of respondents specialised in the field of surgical nursing. In addition, 42.6% ($n = 63$) of respondents indicated completing a specialty practice course Care for a Patient with an Intestinal Stoma. This is the only course in Poland used to give qualifications to nurses in stoma site marking. In addition, 61.5% ($n = 91$) of respondents stated they had participated in additional training and workshops in the field of stoma site marking. All respondents (100%) knew the current recommendations for stoma site marking and considered them to be a mandatory element of stoma care. The full demographic data of the study group are presented in Table 1.

Implementation of the procedure for stoma site marking in medical centres

Only 40% ($n = 64$) of respondents reported that all patients undergoing elective stoma surgery had stoma site marking. The percentage of respondents who reported that stoma sites were sometimes marked in their hospitals was 30% ($n = 48$), while 30% of participants ($n = 48$) indicated that stoma sites were never marked before elective surgery (Tab. 2).

Significant differences were observed between the referral levels of hospitals (levels I–III – provincial hospi-

tals, general hospitals, clinical-teaching hospitals) where the respondents worked and the implementation of the preoperative procedure for stoma site marking. The higher the referral level, the higher the percentage of pa-

Table 1. Respondents' characteristics

Characteristic	N (%)
Gender	
Females	160 (97.6)
Males	4 (2.4)
Age*	
≤ 29	6 (3.7)
30–39	12 (7.5)
40–49	57 (35.4)
50–59	79 (49.1)
≥ 60	7 (4.3)
Work experience in the current position**	
0–9	45 (28.3)
10–19	61 (38.4)
20–29	34 (21.4)
30–39	18 (11.3)
≥ 40	1 (0.6)
Workplace	
District/general hospital	65 (39.6)
Provincial hospital	52 (31.7)
Teaching hospital	39 (23.8)
Other	8 (4.9)
Current job position	
Ostomy nurse	86 (52.4)
Wound nurse	83 (50.6)
Ward nurse	41 (25.0)
Surgical nurse	41 (25.0)
Nurse manager	40 (24.4)
Other	7 (4.3)
Level of education	
Master of nursing	47 (28.8)
Bachelor of nursing	57 (35.0)
Post-secondary medical school graduate	25 (15.3)
Secondary medical school graduate	34 (20.9)
Other	8 (4.9)
Additional education	
Workshops, training: Stoma Site Marking	91 (61.5)
Specialist course (specialization): Surgical Nursing	66 (44.6)
Specialist course: Care for a Patient with an Intestinal Stoma	63 (42.6)
Qualification course: Surgical Nursing	23 (15.5)
Other	32 (21.6)

* No data from 3 respondents

** No data from 5 respondents

Table 2. Frequency of preoperative stoma site marking in elective and emergency surgical patients

Frequency	Surgery mode	
	Elective*	Emergency**
	n (%)	n (%)
Always	64 (40.0)	20 (14.6)
Sometimes	48 (30.0)	33 (24.1)
Never	48 (30.0)	84 (61.3)
Total	160 (100.0)	137 (100.0)

* No data available from 4
** No data available from 27

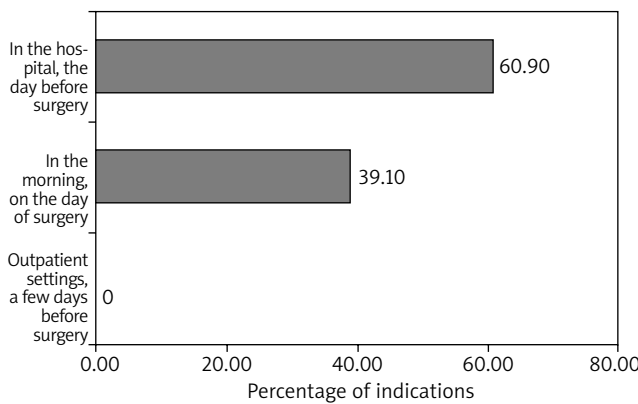


Fig 2. Period in which stoma sites are marked in elective surgical patients

tients in whom the stoma site was marked ($\chi^2 = 15.716$, $p = 0.003$), whereas hospitals of lower referral level were less likely to perform stoma site marking. In teaching hospitals, the procedure was carried out in 57.9% ($n = 22$) of operated cases, in provincial hospitals in 43.1% ($n = 22$) of operated cases, and in general hospitals only in 23.8% ($n = 15$) of operated cases (Fig. 1).

Respondents who work in hospitals where stoma site marking is always performed ($n = 64$) reported that the procedure is performed during hospitalisation, 60.9% reported one day before surgery, and 39.1% reported that it took place on the day of surgery. This procedure is not

Table 3. Failure to mark the stoma site in elective surgical patients due to the lack of educated staff vs. eligible nurses

Completed course entitling the nurse to mark stoma sites	Educated staff		
	No	Yes	Total
	n (%)	n (%)	N (%)
No course	24 (70.6)	46 (74.2)	70 (72.9)
Course	10 (29.4)	16 (25.8)	26 (27.1)
Total	34 (100)	62 (100)	96 (100)

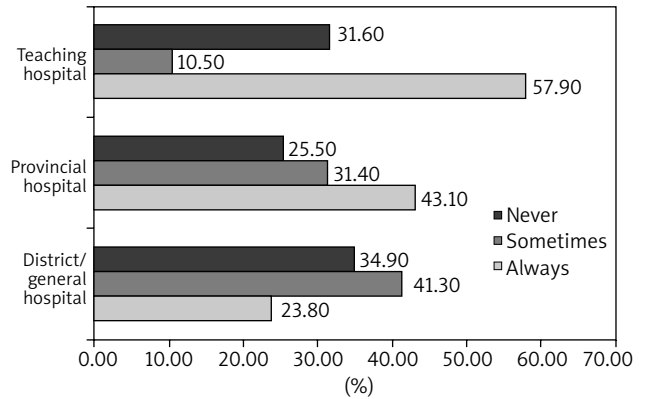


Fig. 1. Preoperative stoma site marking in elective surgical patients and hospital referral level

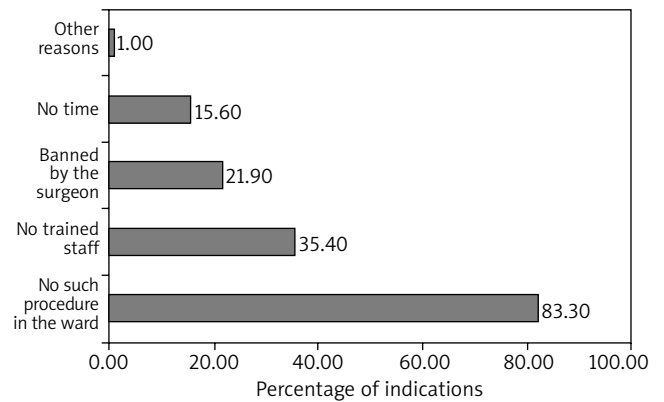


Fig. 3. Reasons for not marking the stoma site in elective surgery patients (multiple indications)

carried out on an outpatient basis in any of the hospitals in which the respondents work (Fig. 2).

Reasons for not marking the stoma site

We examined the factors resulting in no preoperative stoma site marking in patients undergoing elective ostomy surgery. Respondents were asked to select from a list the reasons (Fig. 3). The majority of respondents, as much as 82.3% ($n = 79$), indicated they did not complete preoperative stoma site marking due to the absence of a stan-

Table 4. Association of course stoma site marking course completion by nurses and surgeons' banning of stoma marking

Completed course entitling the nurse to mark stoma sites	Banned by the surgeon		
	Ban	No ban	Total
	n (%)	n (%)	N (%)
No course	10 (14.29)	60 (85.71)	70 (72.9)
Course	10 (38.46)	16 (61.54)	26 (27.1)
Total	20 (100)*	76 (100)	96 (100)

* No data about the course from 1

Table 5. Failure to mark the stoma site in elective surgical patients due to the lack of time vs. working as a stoma nurse

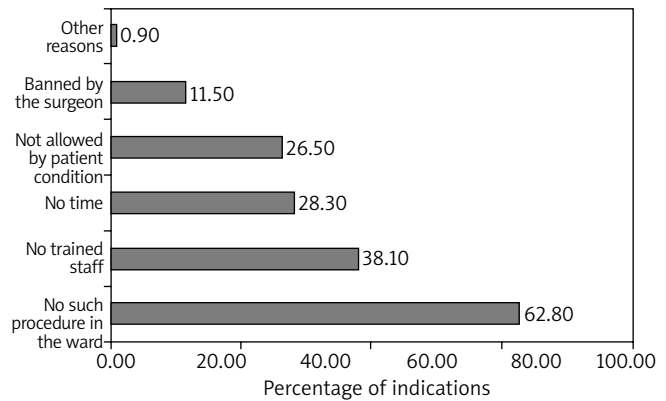
Working as a stoma nurse	Time		Total <i>N</i> (%)
	No time	Time available	
	<i>n</i> (%)	<i>n</i> (%)	
Yes	6 (40)	37 (45.7)	43 (44.8)
No	9 (60)	44 (54.3)	53 (55.2)
Total	15 (100)	81 (100)	96 (100)

standard protocol or policy for this procedure in their hospital. The second most frequent reason for the lack of stoma site marking was the shortage of educated staff – 35.4% ($n = 34$) of answers. In the group of respondents who indicated such an answer, 29.4% ($n = 10$) had completed the course entitling them to perform this procedure (Tab. 3). Another reason for not marking the stoma site was the surgeon's ban on carrying out such a procedure in the ward. It was indicated by as many as 21.9% ($n = 21$) of nurses. In the group of nurses who indicated the surgeon's prohibition as one of the reasons for not marking the stoma site, as many as half had completed a course qualifying them to perform this procedure (Tab. 4). Furthermore, we explored the association between the proportion of nurses that were banned from marking the stoma site by surgeons and their completion of a stoma marking course. Among nurses who had completed a course 38.5% ($n = 10$) were banned by the surgeon to mark the stoma site, while among nurses without the course 14.3% ($n = 10$) were banned ($p = 0.0095$). Lack of time, as a reason for not implementing the procedure of stoma site marking, was indicated by 15.6% ($n = 15$) of respondents, of whom 40% worked as stoma nurses in the ward ($n = 6$) (Tab. 5).

We evaluated factors that contributed to complete preoperative stoma site marking in patients undergoing emergency ostomy surgery. According to 61.3% ($n = 84$) of respondents, no stoma site marking is performed before emergency surgery in their centres. Only 24.1% ($n = 33$) of respondents reported that the procedure for emergency stoma site marking is sometimes carried out (Tab. 2). The most frequently indicated reasons for no or infrequent stoma site marking was lack of procedure in the ward (62.8%, $n = 71$), lack of educated personnel (38.1%, $n = 43$), and lack of time (28.3%, $n = 32$). In addition, 26.5% ($n = 30$) of the nurses indicated that the patient's condition prevented moving them in the necessary positions to perform the stoma siting procedure (Fig. 4).

Discussion

The present study shows that only 40% of the surveyed nurses worked in surgical wards where preoperative stoma marking was always routinely performed for

**Fig. 4.** Reasons for not marking the stoma site in emergency surgical patients (multiple indications)

elective surgery. The percentage of respondents who indicated that stoma site marking was performed only sometimes was 30%, while the remaining 30% of respondents claimed that it was never performed. The main reasons for not marking the stoma site included lack of such a procedure in the ward, lack of educated personnel, a ban imposed by the surgeon, and lack of time. In the case of emergency procedures, where the implementation of the procedure was confirmed by only 14.6% of respondents, the additional reason for the abandonment of the procedure was the poor condition of patients, which prevented them from changing position and therefore made stoma site marking impossible.

A higher quality of life and fewer peristomal complications are the most frequently indicated benefits of preoperative stoma site marking in studies by various authors [18–23]. Several reports suggest that preoperative stoma site marking can have an impact on maintaining a secure seal on the pouching system with a reduction of leaking [9, 23, 24], and achieving patient independence in stoma care [9, 22–24]. Along with preoperative education, it can contribute to reducing anxiety [20] and have a positive effect on the acceptance of the new appearance of one's body [24, 25]. Experts from WOCN and ASCRS recommend preoperative stoma site marking before each surgery [8] citing several of the above-mentioned studies. This procedure has been translated and adapted by other countries [3, 26].

The results of our study indicate that despite the available global and national recommendations related to preoperative stoma site marking, the Polish nurses in our study reported that stoma site marking for elective ostomy surgery was done in only 40% of the departments in which the surveyed nurses worked. The authors obtained similar results in 2015 in their study on the implementation of ostomy care in Poland. Among the 72 nurses surveyed, 43.7% declared that in their medical centres the stoma sites were marked before each elective surgery [27]. These results showed that, despite the passage of years,

this problem remains unsolved, and a broader analysis of the observed phenomenon is needed.

There are several studies reporting the numbers of patients undergoing stoma site marking, including one by Person *et al.*, who demonstrated that 49.5% of patients had the stoma site marked before surgery [22]. Furthermore, in a multi-centre study conducted in 2012, Demir reported a level of implementation of stoma site marking equal to 38.4%; the author emphasised that in Turkey, the experts from Turkish Wound Ostomy Incontinence Nurses Society, following the recommendations of the WOCN and ASCRS, recommended preoperative stoma site marking before each surgery [28].

Unfortunately, no studies were found to analyse the reasons for the abandonment of stoma site marking in elective surgical patients, which was one of the subjects of our research. It can only be assumed that there are still countries where the reason may be the lack of knowledge about the existence of this procedure. The results of our research showed that all respondents (100%) confirmed their knowledge of the procedure. All the nurses declared that preoperative stoma site marking is one of the key elements of ostomy care and should be mandatory. It is even more surprising that, with full awareness of nurses about the existence of recommendations, such a low percentage of procedure implementation in hospital centres is indicated.

The analysis of factors that may contribute to the lack of stoma site marking demonstrated that the main reasons were the organisation of work and the lack of a binding written policy/procedure in the ward (82.3% of responses). Based on these results, it could be assumed that the introduction of a uniform procedure in hospital wards performing stoma creation would oblige, and at the same time entitle, qualified nurses to carry out preoperative stoma site marking.

The education of personnel marking the stoma site is of great importance in the effective implementation of the procedure. This is confirmed by the results of conducted studies, in which 35.4% of respondents also indicated that one of the reasons for not marking the future stoma site is the lack of educated personnel in the ward. The data suggest an urgent need to increase the number and availability of relevant courses for the staff. However, the analysis of the education of nurses surveyed demonstrated that almost 1/3 of them hold a certificate of a national course for ostomy nursing. In the future, the obtained results should be subjected to more extensive studies to find out the reasons for abandoning preoperative stoma site marking by nursing staff with appropriate qualifications. An evaluation of the implemented training program in this field should also be carried out, specifically because according to the presented results many nurses who completed stoma marking course still do not carry out this procedure routinely.

The role of the team and cooperation between its members is important in ostomy care. Unfortunately, over

20% of the respondents working in wards where stoma sites are not marked before each surgery indicated that one of the reasons for not undertaking the procedure is a ban imposed by surgeons, who also did not perform the procedure. These results are even more difficult to interpret and accept because 50% of nurses working in these departments declared completion of a course entitling them to perform this procedure. The study results suggest the need to increase the awareness of surgeons in the field of ostomy care and their awareness of nurses' education in that field.

The procedure for preoperative stoma site marking requires a holistic approach to patients and the right amount of time; lack of time (15.6% of indications) was the last reason indicated by nurses for abandoning this procedure. It can be presumed that combining several nursing functions (e.g. ward and stoma nurse, or dressing and stoma nurse), as practiced in the Polish health care system, results in the lack of time for the implementation of basic ostomy care procedures. Wasserman *et al.* indicated that preoperative stoma site marking should be performed in hospital outpatient clinics because it is less stressful for patients and allows them to actively participate in the procedure [23]. The results of the authors' research show that centres in which stoma sites are marked always carry out the procedure in hospital settings, the day before surgery or on the day of surgery. The implementation of the procedure in the outpatient clinic could not only reduce the patient's stress but also eliminate the problem of hospital staff resulting from the lack of time to mark the stoma site.

Our study also verified the procedure for stoma site marking in situations where it is necessary to perform emergency surgery. Scientific reports include recommendations on stoma site marking before urgent surgery [3, 29]. The results of our study demonstrate that only 14.6% of centres implement this procedure. Similar results were obtained by Gok *et al.*, who indicated a very large difference between the implementation of the procedure in elective (84%) and emergency (16%) surgery [30]. Milan *et al.* conducted a multi-centre study, which demonstrated that this procedure was not carried out at all for emergency surgery, even in highly specialised colorectal centres [31].

The analysis of our results showed that the main barrier for not performing this procedure in the case of emergency surgery was the lack of a standard operating procedure in the ward for stoma marking. Secondly, the lack of educated staff was emphasised. This situation can be explained by the specificity of emergency procedures, which often take place in the afternoons and nights, when there are no ostomy nurses available. In addition, a quarter of the respondents pointed to the poor condition of the patient, preventing a change in body position and marking the stoma site.

In the Zimnicki study the lack of educated staff was identified as the main obstacle for marking the stoma site and preoperative ostomy education of patients undergo-

ing emergency surgery. The author suggests that one of the options to increase the number of patients marked preoperatively is the training of nurses who are not ostomy nurses, but who take care of emergency patients [29].

To improve the quality of ostomy care, it would be worthwhile to include a team of doctors in such training, taking into account the fact that 11.5% of nurses indicated a ban imposed by the surgeon as the reason for not marking the stoma site in emergency surgical patients.

Conclusions

While the procedure of stoma site marking and its scientifically proven advantages are well reported, the implementation of that procedure into everyday practice is still not satisfactory in Poland. To standardise the process of preoperative stoma marking, a policy and procedure should be in place that is part of the standard preoperative workup in elective colorectal surgery. Furthermore, it is paramount to increase the number of available courses and training possibilities for stoma nurses as well as to increase the consciousness of surgeons on its importance. Ideally, in the future, stoma site marking should be possible in an outpatient clinic and performed preoperatively by an educated advanced nurse-practitioner.

Disclosure

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4. Conflicts of interest: None.

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