

## *Influence of Healthcare on the Outcome of the Treatment of Patients with Stoma.*

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### **Abstract**

**Background:** Although stoma is a crucial surgical procedure, this operation has a physical and psychosocial impact on the patient, their habits and quality of life, which they should be properly educated on.

**Objectives:** The purpose of the work is to analyze the impact of health care, key factors and problems that affect the final outcome of treatment in patients with a stoma, as well as suggestions and guidelines for improvement.

**Material and Methods:** The results of 10 studies were reviewed including clinical trials, randomized prospective and retrospective studies published between 2011 and 2021.

**Results:** Education of patients, their families, and medical staff is crucial in improving the quality of life of patients with stoma but also in reducing potential complications of stoma, along with stoma marking. It is also necessary to pay special attention to psychosocial problems in patients, as well as stoma problems in Bosnia and Herzegovina.

**Conclusion:** More needs to be invested in educating staff, patients and their families about stoma, and integrating stoma patients into society in order to improve their life quality.

**Keywords:** stoma, complications, quality of life, stoma education

### **Introduction**

Health care of a patient with a stoma includes professional planning, implementation and evaluation of the specific procedures performed. As the operation can essentially solve the cause of the disease, the nurse/medical technician, enterostomal therapist, will prevent, detect and solve the accompanying problems that the sick person has due to the disease or operation, with planned activities in the field of health care. Continuous professional development of nurses and standardization of the procedures and activities carried out is necessary. In this way, we ensure equality in quality and increase patient safety, related to the performed procedures to which we expose them. The goal of planning the health care of a patient with a stoma is to establish a balance between the realistic possibilities and needs of independent care [1]. The knowledge and skills of healthcare professionals can help improve the quality of life before and after surgery [2].

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*The aim of the work is;* to analyze the impact of health care on the final outcome of treatment in patients who have stoma; to analyze the key factors and problems that influence the outcome of the treatment of people with a stoma; to present proposals for better care of people with a stoma based on the research results

### Research methodology

A review of scientific literature published in reference databases (PubMed, Google Scholar, ScienceDirect, Annals of Rehabilitation Medicine, Dabar, ResearchGate, Science Citation Index, CrossRef, Index Copernicus, Icmjer, Reviewer Connect Publons) was performed. It includes clinical trials, randomized prospective and retrospective studies. The research includes studies that were published in English, in the period between 2011 and 2021. The criteria for inclusion in this paper are scientific research studies that are primarily focused on the impact of health care on the outcome of stoma treatment in patients, more precisely on the physical and psychosocial impact, lifestyle habits, quality of life, and the importance of education for patients with stoma. Keywords for the search are the following: stoma patients, stoma education, impact of stoma, quality of life.

### Research Results

Using the PRISMA flow diagram, a selection of 10 scientific research papers that meet the set criteria was made. All professional papers with their general characteristics are tabulated below for clarity (table 1).

### Discussion

Colon cancer is becoming a growing public health problem. The location of the stoma is an independent risk factor for the development of stoma complications. Preoperative marking of the stoma should be considered to reduce the risk of stoma-related complications [3]. Several retrospective studies have shown that preoperative stoma marking can reduce the rate of complications and enable optimal stoma care for the patient during daily activities [4].

A statistically significant difference was found in the study by Baykar ZG *et al.* where stomal and peristomal complications developed in 40% of stoma patients who underwent emergency surgical interventions, and in 31.1% of stoma patients who underwent planned surgical interventions [5].

Most patients who have developed peristomal skin complications have caregivers and family who are not sufficiently educated to help them with stoma care [6].

Person B *et al.* shown necrosis usually develops and remains in this form in a small number of patients, from 0.6 to 4.6%, while stoma dehiscence occurs more often, from 7.8 to even 19.5% of patients), with very a small number of those who do not experience severe stoma dehiscence, about 2.2% [7].

It has been shown that early complications are more common after colostomy than ileostomy.

Koc U *et al.* in their study found the rate of stoma retraction was significantly higher in women than in men (5.9% vs. 2.7%), overall 11.1% in eight dental departments in Turkey [8]. Slightly lower retraction rates were found in 3.2% of patients at the Türkiye Yüksek İhtisas Teaching and Research Hospital in Turkey. Stenosis occurs in some studies from 0.9% to 2.2% [8].

The rate of parastomal hernia in patients in the studies used in this paper is low, ranging from 0.2% to 0.7% [9, 10, 11, 12].

Stoma prolapse was recorded in a small number of patients as well, from 2.7% (11) to 3.2% [13].

The type of stoma, type of operation, surgical technique, preoperative marking of the stoma site and general health of the individual - in addition to preoperative and postoperative follow-up care, appropriate peristomal skin care and patient education - influence the development of complications [14].

Several studies have found that stoma patients faced several problems after stoma creation due to lack of education, preoperative preparation, and postoperative care. Several studies have shown that the rate of stoma complications is lower after ileostomy than after colostomy surgery. [15, 16]

The quality of life of patients whose stoma sites were marked preoperatively was significantly better than that of unmarked patients, their independence parameters were significantly better, and the rate of complications was significantly lower. All these results were significant regardless of the type of stoma. Preoperative marking of the stoma is essential for improving the postoperative quality of life of patients, encouraging their independence and reducing the rate of postoperative complications. [17]

According Szpilewska *et al.* the majority of respondents have limitations in their daily activities (56.43%), while 21.78% of people stated that they do their daily activities better in Poland [18].

Anaraki *et al.* state that almost half of the patients included in the study, 48% to be exact, were forced to change their clothing style in order to adapt to life with a stoma. Patients with a stoma, for reasons such as the location of the stoma, changes in weight and changes in body appearance, were forced to change their clothing style, which in itself reduced their quality of life.[19]

In a study by Szpilewska *et al.* the majority of respondents stated that their health worsened after the operation, 19.80% of respondents felt that their health had improved, and 23.76% of respondents did not notice a clear change. People spoke similarly about the way to rest after surgery. The frequent occurrence of physical pain after surgery was mentioned by more than 23% of respondents, and 52.47% experienced it sporadically [18].

In the same study, economic conditions worsened for more than 58% of respondents, while others rated them

as unchanged (27.72%) or better (13.86%). Most of the patients reported that they had to change or leave their jobs after the onset of the disease, and that this had a significant impact on their income.

When the person regains his strength, after the end of the treatment and recovery, he can return to his regular activities and jobs that he did before. As many as 12.87% of patients report that they do not feel any limitations in their professional work [18].

When returning to work, one should explain to the employer what a stoma is. Most employers support and understand people with a stoma without any problems. The best way is to talk openly, and this will also help in educating other associates.

Physical jobs such as carrying or lifting heavy loads, and similar heavy jobs are not recommended and should be replaced by lighter ones, which was done by 83.3% of respondents from the study by *Anaraki et al.* [19], because they can cause stoma prolapse or hernia.

While the majority of patients (81.4%) reported being sexually active before stoma surgery, only 33.3% continued to be sexually active after surgery. It was reported that 31.4% of patients were satisfied with sexual activities, and 40.2% of male respondents had problems with erection, according to *Anaraki* [19]. On the other hand, in Poland, 54.45% of people showed a similar or better interest in sex, and 25.74% much less [18].

As many as 82.4% of patients were forced to change their dietary habits after stoma surgery, according to *Anaraki and colleagues*. [19]

Most patients had a change in diet due to gas control problems, but most of them coped with these conditions over time [20].

These results emphasize the need to develop long-term support mechanisms so that patients can better cope and adapt to life with a stoma, while in one study this was measured by an ostomy-specific questionnaire called the Ostomy Adjustment Scale (OAS) [21].

Most patients report that it took them at least 6 months to feel comfortable with daily care and nutrition.

Although most patients get used to this kind of life over time, they have to make sacrifices in the form of adjusting their lifestyle and habits, such as diet, clothing, work, physical activities, etc., all of which affect the individual's personal experience of the quality of life [22].

Patients often become depressed, which is usually more than 50% of patients. Research in Poland states that the respondents stated that after the operation they did not enjoy any kind of entertainment or very rarely and exceptionally - as many as 75.24% [23].

*Szpilewska* et al. in relation to satisfaction with appearance states that 18.81% of people noticed a better appearance after the operation, 56.4% worse, while 24.75% did not notice any change. The majority of respondents accept their illness at an average level (66.33%), scoring from 19 to 29 points on the AIS (Acceptance of Illness

Scale). Not accepting the disease affects women more often (M - 10, F - 21). Men (75.0%) have a better level of acceptance of the disease than women (60.7%). The minimum number of points achieved during the assessment of acceptance of the disease was achieved by a person with a higher education. [18].

People who stated that they have a basic education indicate a much better level of acceptance of their illness. This indicates that there are statistically significant differences between education and the degree of acceptance of the disease, so it can be concluded that education affects the degree of acceptance of the disease. The higher the degree of acceptance of the disease, the better the patients' quality of life [24].

A stoma can affect both the intra and interpersonal aspects of the lives of those who live with it, in a negative and positive way. Consequently, relationships with partners, family members and friendships can be causes of trouble. On the other hand, partners provided support for some, and children were also a source of comfort. A stoma can destabilize one's sense of self, disrupt one's body image, and change one's experience age and sexuality. Other participants were able to use their illness to positively reshape themselves. Disclosing ileostomy status was difficult for some. Intimate and friendly relationships were often questioned due to the stoma status, while other family relationships were largely characterized as supportive [25, 26].

Women described more specific psychological and social problems than men.

Living with an ileostomy also affects relationships with others: partners, friends and family. According to *Smith et al.*, for some, the ileostomy led to the perception or fear of rejection from other people, while the rest of the respondents received support from people in their social circle [27].

Almost 41% of the respondents stated that their relations with their relatives had worsened, and 19.80% experienced an improvement in this area. Statements related to friendships and social contacts are similar: their improvement is indicated by 19.80% and 16.83%, and deterioration by 46.53% and 48.5%, respectively, states *Szpilewska and associates* [18].

Perhaps this is due to the fact that the physical and psychological disorders resulting from a stoma can gradually reduce a person's self-confidence and reduce their social relationships. These factors are often closely related and lead to a certain degree of social isolation [28].

As self-efficacy is an essential component of living with a stoma, appropriate preoperative counseling and postoperative follow-up services for patients and their families are essential to address multidimensional issues including psychosocial and sexual aspects. Furthermore, integration with all related specialties, including psychosocial well-being and sexual health, and the formulation of a stoma support group would be helpful to share their experiences [15].

Because of these results, the main focus should be on the social reintegration of patients with a stoma. Considering the physical obstacles of a stoma, which are mastered over time, patients in most cases consider themselves less valuable, so they often withdraw from social situations, relationships, or avoid them completely, thus leading to isolation.

On the other hand, the closest family and closest social circle of the patient are mostly fully present, which ultimately helps the patient to overcome the psychological effects of the stoma.

Depression, anxiety, disturbed self-image and lack of self-confidence stand out.

Living with a stoma affects the entire aspect of quality of life. The presence of a permanent stoma can affect the quality of life, and a permanent stoma is associated, for example, with poor self-esteem and increased financial worries, although this did not affect the global quality of life.

It is an interesting fact that, although the QOL (Quality Of Life) specific to the stoma was often acceptable, it was still necessary to solve numerous problems related to the stoma. Health quality of life was measured by HRQOL and SF-36 questionnaires and 15D instrument, while QOL was measured by COH QOL Ostomy and Stoma QOL questionnaires [27].

Acceptance of the disease is closely related to the quality of life of stoma patients. Of the group of respondents in Poland who do not accept the disease, 23% showed a poor quality of life. The quality of life at a good level in this group of people is marked with 77%. No one in this group has a very good quality of life.

Among the group of respondents, whose acceptability of the disease is at an average level, up to 93% of people have a good quality of life. 3% answered that they have a bad quality of life, and 4% that they have a very good quality of life. Of the group of respondents who accepted the disease at a good level, 67% pointed out that their quality of life is good. 33% answered that they have a very good quality of life [18].

Problems related to the stoma mentioned included sexual problems, feelings of depression, gas, constipation, dissatisfaction with the appearance, changing clothes and difficulty traveling, feeling tired and worrying about noises from the stoma. Patients with a stoma had more problems in physical functioning, worse ratings of fatigue and loss of appetite, and more problems with self-image and sexual functioning of the body than patients without a stoma [16].

Sexual disorders and feelings of depression were major problems of patients with a stoma, and sexual and psychological consultations can improve the quality of life of patients [14].

Furthermore, the best quality of life was observed in the group of people with the highest level of education (university and high school), while the statistically significantly lowest values were among people with completed or incomplete elementary school [18].

On the other hand, people with higher education received the minimum number of points achieved when assessing the acceptance of the disease, while people who declared primary education indicated a significantly better level of acceptance of their disease. Szpilewska states that there are statistically significant differences between education and the degree of acceptance of the disease, so it can be concluded that education affects the degree of acceptance of the disease [18].

In order to further distinguish whether time, as one of the key predictors of QOL, has an influence on the mentioned problems, all categories were analyzed over time from the creation of the stoma to 8 years after placement. According to the obtained results, people with a stoma have the most problems related to the product, namely the first group who have had a stoma for 6-12 months and the second group of respondents who have had a stoma for 4-8 years. The above can be explained in the first group by fear, lack of knowledge and manual skills and possibly an inadequate choice of stoma device, while the results of the second group can be explained by a loss of will and interest and laxity, as well as security in the existing stoma device without the need and interest in changing the stoma device in terms of novelty available on the market [27].

Analyzing the relationship between the quality of life and the type of stoma, a difference can be observed in all domains of quality of life assessment. People with a colostomy have, on average, higher average scores in the overall QoL score. A particular difference is visible in the spiritual domain [26], while the social subscale had the lowest score. [27].

As mentioned earlier, depression and problems with stoma localization were considered predictors of overall quality of life

The quality of life in patients with a stoma is significantly lower than in patients without a stoma. Adaptation to the new physical condition comes with psychological, social, economic, and these are just some of them [10-18].

As for hospitalization, education can play an important role in its duration. Patients who were included in the already mentioned ERAS program had a significantly shorter number of days of hospitalization compared to patients who were not. The total hospital stay for patients who received a stoma was significantly shorter in the ERAS group, an average of 6 days, with a range of 2 to 21 days, compared to patients who received standard care, an average of 9 days, with a range of 5 to 45 days. Postoperative length of stay was also shorter in the ERAS group, an average of 5 days, with a range of 2 to 12 days, compared to patients who received standard care, an average of 9 days, with a range of 5 to 24 days.

There is also a significant difference in the proportion of patients who developed complications with a stoma, 38% in the ERAS group and 51% in the standard care group [18]. Educational activities aimed at increasing knowledge and focusing on the psychosocial needs of patients can lead to



an increase in the health-related quality of life of patients. When patients with a stoma attend a structured patient education program, it is possible to improve their health-related quality of life compared to patients with a stoma who do not attend the program. Establishment of a structured patient education program aimed at patients with a stoma improved by a specific disease within the framework of health quality of life.

A program that includes interventions aimed at increasing knowledge as well as self-management could benefit from the involvement of lay teachers in addition to health professions teachers. Furthermore, the use of telephone follow-up after hospital discharge can increase patients' health-related quality of life [20].

A study conducted in Taiwan shows that an educational intervention using a multimedia approach, early in the postoperative period, can have a positive effect on the level of knowledge and also promote attitudes and behavior about self-care. Given these results, legislators should consider replacing written information with more detailed multimedia programs as part of postoperative education for stoma patients. For example, multimedia programs have a place in the early education of patients after surgery [7].

Significant changes in health quality of life assessments were most likely a consequence of the beneficial effect of participation in the educational program. One of these studies showed that preoperative education of patients in the patient's home had a significant impact on the acquisition of knowledge of patients about coping with a stoma [13].

Preoperative and postoperative education of patients and their families is important in order to improve the quality of life of patients with a stoma [10, 13]. entertainment and can adapt them to their abilities [9].

In order to achieve better self-care outcomes, nursing practice with stoma patients should also address perceived barriers to self-care and identify possible coping resources to increase the impact of educational programs [19].

Education of patients with a stoma is a key factor in the quality of life of people with a stoma. It begins with the first visit to the surgeon, and continues with the nurse, and later, if the institution employs one, and the stomatologist [18, 20]. There are even programs in the world that focus on the fastest and most effective recovery after stoma surgery, which have already been shown in some studies to be more effective than the standard care of these patients [18]. Also, modernization of education was recommended, because it also brought better results than standard care [19]. The purpose of education, in addition to adapting to the stoma, is also to reduce the possibility of complications of the stoma, which it also contributes to, as shown by a certain number of studies [2, 3, 6, 13].

There are more than 7,000 people with a stoma in Bosnia and Herzegovina. Unfortunately, their number continues to grow, which is related to the increase in the number of people suffering from bowel, rectal or bladder cancer, as well as ulcerative colitis and Crohn's disease. A stoma changes

life, although in itself it is not an obstacle to a quality life, including a social life and an active sexual life [12, 15].

Obstacles can represent the underlying disease itself, the treatment of which led to the formation of a stoma. After surgery, it seems as if it is impossible to live normally with a stoma, but by gradually accepting the new situation, it is very possible. The patient's quality of life after surgery largely depends on how willing the patient is to cooperate for healing, listen to and practice the dietary instructions received [15]. Also, the quality of life of a patient with a stoma depends on the level at which the patient has adopted the stoma care procedures and accepted lifestyle with a stoma [21].

The importance of the nurse in the care of patients with a stoma is indispensable, and it begins with the diagnosis of the patient, instructions and advice about the disease, therapy, surgical procedure, possible outcomes and quality of life after the procedure. At the same time, the nurse notices and takes care of physical, psychological and emotional problems that occur in the patient, as well as his family, and through effective communication, education and support, he tries to maintain and preserve the dignity of the patient and the quality of his life [22].

The opening of the center in BiH would greatly affect the quality of the education of nurses and certainly bring even better results in the education of patients and their families. Only quality and highly educated healthcare staff can ensure quality education and good acceptance of stoma.

As self-efficacy is an essential component of living with a stoma, appropriate preoperative counseling and postoperative follow-up services for patients and their families are essential to address multidimensional issues including psychosocial and sexual aspects. Furthermore, integration with all related specialties, including psychosocial well-being and sexual health, and the formulation of a stoma support group would be helpful to share their experiences [15].

Through the continuous teamwork of all healthcare professionals, we will increase patient satisfaction with the healthcare provided and improve the quality of life. The importance of all nurses is the education of the general population, that is, the education of the public about stoma, familiarization with stoma and the problems that patients face, and the impact on reducing the stigmatization of patients with stoma [29].

## Conclusions

Marking the stoma is important in reducing the complications that can potentially arise due to the placement of the stoma.

Education of patients, their families, and medical staff is crucial in improving the quality of life of patients with a stoma.

Education of patients, their families, and medical staff is extremely important in reducing complications that can potentially arise due to the placement of a stoma.

In addition to physical problems, it is necessary to pay special attention to psychosocial problems in patients with a stoma.

It is necessary to pay more attention to the problem of stoma in Bosnia and Herzegovina.

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*Table 1. All professional papers with their general characteristics*

Study number	State	Author/Year/Reference	Name of the study	Type of study	Objectives of the study	Research methods	Results	Conclusion
I	Poland	Szpilewska K., et al., 17, (2018),	Acceptance of disease and the quality of life in patients with enteric stoma	A cross-sectional study	Evaluation of disease acceptance and quality of life of colostomy patients	The study included 101 patients with a stoma performed between February 2015 and February 2016 at the Regional Specialist Hospital in Wrocław. Two anonymous questionnaires were used, i.e. health-related quality of life (HRQoL) and acceptance of illness scale (AiS).	The majority of respondents pointed out the deterioration of the quality of life. The degree of acceptance of the disease among men is 75%, and among women 61%. Social factors that influence the quality of life and acceptance of the disease, namely gender, age, education, job and place of residence.	The higher the level of acceptance of the disease, the better the quality of life of patients with a stoma, and it is necessary to educate patients about their functioning in society.
II	Denmark	Danielson, A. K., Rosenberg, J., 18, (2014)	Health related quality of life may increase when patients with a stoma attend patient education - a case-control study	Case control study	To investigate the effect of a structured patient education program on health-related quality of life	The study included 50 adult patients who had educational interventions. Health-related quality of life was measured before discharge from the hospital, three months and six months after the creation of the stoma.	A significant increase in HRQoL was detected in the intervention group and no significant change in the control group, with no significant differences between the groups in the period of 3 and 6 months.	When patients with a stoma attend a structured patient education program, it is possible to improve the quality of their health-related lives compared to those who do not attend the program.
III	Denmark	Alenezi, A.N., Mansour, E.A., 9, (2016)	Impact of stoma care education in minimizing the incidence of stoma skin complications	A randomized controlled trial	To evaluate a structured patient education program on minimizing skin complications in patients with a stoma.	Before discharge, the studied group was given a designed educational program for stoma care. Peristomal skin area was assessed one, three and six weeks after hospital discharge for both groups.	Significant reduction of peristomal skin complications in the study group compared to the control group, even six weeks postoperatively ( $P=0.028$ ).	Patients with a stoma who attended a structured patient education program have fewer peristomal skin complications compared to those who did not.
IV	Norway	Forsmo, H. M. et al, 4, (2016)	Pre- and postoperative stoma education and guidance within an enhanced recovery after surgery (ERAS) programme reduces length of hospital stay in colorectal surgery	A prospective study	To investigate whether an enhanced recovery after surgery (ERAS) program can reduce hospital length of stay, readmissions and ostomy complications, and improve HRQoL compared with standard education	In a single-center study, 122 adult patients who received a planned stoma were treated either in an ERAS program with extended stoma education ( $n=61$ ) or standard care with current stoma education ( $n=61$ ). HRQoL was measured with a generic 15D instrument.	Total hospital stay was significantly shorter in the ERAS education group than in the standard care group ( $p<0.001$ ). Regarding overall major and minor morbidity, readmission rate, HRQoL, stoma-related complications, and 30-day mortality, the two treatment groups showed similar outcomes.	Preoperative and postoperative stoma education in an enhanced recovery program was associated with a significantly shorter hospital stay without any difference in readmission rates or early stoma-related complications.
V	Iran	Anaraki, F. et al., 14, (2012)	Quality of life outcomes in patients living with stoma	A cross-sectional study	To assess the quality of life of patients with a stoma using a special measuring tool	The City of Hope Quality of Life-Ostomy Questionnaire (COH-QOL) was used in 102 patients to collect demographic and clinical information and to assess quality of life.	70% of patients were dissatisfied with sexual activities, and more than half of them reported depression after surgery. Factors such as the type of stoma, the disease that is the cause of the stoma, depression, the location of the stoma and the change in the style of clothing have significant effects on the total QOL and its subscales ( $P<0.05$ ).	The findings showed that living with a stoma affects the overall aspect of quality of life. Education of patients and their families is important for improving the quality of life of patients with a stoma. Sexual and psychological consultations can also improve patients' quality of life.

Study number	State	Author/ Year/ Reference	Name of the study	Type of study	Objectives of the study	Research methods	Results	Conclusion
VI	Israel	Person, B. et al., 20, (2012)	The Impact of Preoperative Stoma Site Marking on the Incidence of Complications, Quality of Life, and Patient's Independence	A prospective study	Evaluation of the impact of preoperative stoma marking on patients' quality of life, their independence and the rate of complications.	A validated QOL questionnaire was used in 105 patients who had a stoma created between 2006 and 2008. Complications were recorded during regular postoperative visits, and parameters included demographics, stoma type, marking status, complication rates, QOL, and independence parameters.	52 (49.5%) patients were marked preoperatively, and 53 (50.5%) were not. The QOL of patients whose stoma sites were marked preoperatively was significantly better than unmarked patients ( $p<0.05$ ), their independence parameters were significantly better, and the complication rate was significantly lower, regardless of the type of stoma.	Marking the stoma before surgery is essential for improving the post-operative quality of life of patients, their independence and reducing the rate of postoperative complications. The role of the enterostomal therapist is very important in pre-operative and post-operative care.
VII	Taiwan	Lo, S. et al., 25, (2011)	Multimedia education programme for patients with a stoma: Effectiveness evaluation	A randomized controlled trial	Evaluation of the effectiveness of a multimedia educational program that deals with knowledge about stoma, attitudes about self-care and behavior in patients with stoma in the postoperative period.	A validated QOL questionnaire was used in 105 pat. who had a stoma created between 2006 and 2008. Complications were recorded during regular postoperative visits, and parameters included demographics, stoma type, marking status, complication rates, QOL, and independence parameters.  A total of 102 stoma patients from Taiwan were randomly assigned to a multimedia education program ( $n=46$ ) and a standard ostomy education program ( $n=56$ ). The measured outcome variables were knowledge levels, behavior, and attitudes about self-care.	Patients who underwent a multimedia educational program statistically significantly improved their overall self-care knowledge, attitudes, and behaviors compared to those who underwent a conventional stoma education program.	Multimedia packages can improve patient involvement in their stoma care and can improve stoma education, especially in resource-limited healthcare settings.
VIII	Turkey	Koc, U. et al., 19, (2017)	A Retrospective Analysis of Factors Affecting Early Stoma Complications	A retrospective study	Analysis of the frequency of early stoma complications and determine risk factors that can predict stoma complications	Descriptive statistics were used to analyze patient and surgical variables, as well as short-term (30-day) outcomes of 462 consecutive patients who underwent ostomy surgery between January 2008 and December 2012.	The incidence of short-term complications was 28.4%. Complication rates were highest in patients who had malignant disease, a colostomy, or a stoma located in the left lower abdominal quadrant, while the latter was an independent risk factor for the development of early stoma complications.	Rates of early stoma complications are higher in patients with malignant diseases, after colostomies and permanent stomas. The location of the stoma is an independent risk factor for the development of stoma complications, and preoperative marking should be considered to reduce the risk of stoma complications.
IX	Turkey	Baykara, Z.G. et al., (2014)	A multicenter, retrospective study to evaluate the effect of preoperative stoma site marking on stomal and peristomal complications	A retrospective study	Assessment of the effect of preoperative stoma marking on postoperative stomal and peristomal complications	A one-year retrospective and descriptive study included 748 patients from eight stomatology units in Turkey. Data on patients were obtained from patient records, extracted and analyzed.	Stoma/peristomakomplikacionsu se razvile kod 248 (33,2%) osoba. Stopakomplikacijabila je većakodpacijentačijemjestostomenije označenonegokodonihčije je mjestostomeoznačeno (22,9% i 46%, respektivno; $P<0,001$ ).	Patients whose stoma location was not assessed and marked preoperatively, regardless of the type of surgery, had a significantly higher rate of postoperative complications than patients who underwent preoperative marking of the stoma site.



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X	India	Davis, D et al., (2020)	Impact of stoma on lifestyle and health related quality of life in patients living with stoma: A cross sectional study	A cross-sectional study	Determining the quality of life and the impact of stoma on the patients' lifestyle at the gastroenterology department of the Tertiary Care Center in South India during 2018	55 patients were included in the study, following the sequential sampling technique. Data was collected using City of HopeQOL questionnaires that had questions to assess the quality of life from four subdomains including physical, psychological, social and spiritual aspects.	The average QOL score of the subjects was $4.13 \pm 1.07$ . Patients achieved relatively good results in physical ( $5.68 \pm 1.76$ ) and spiritual ( $4.32 \pm 1.36$ ) domains, but the result of the sociological ( $2.85 \pm 1.3$ ) domain was very low. Patients with permanent stoma had significantly better results than temporary ones ( $P=0.04$ ).	The average QOL score is significantly low and living with a stoma affects the overall aspect of quality of life. As self-care is necessary, appropriate preoperative counseling and postoperative services for patients and their families are essential, as is the formation of support groups.

Diagram 1. PRISMA model

