

The association between personality trait and the development of postoperative complications in enterostomized patients.

Systematic review of literature.



Ann. Ital. Chir., 2020 91, 1: 74-87
pii: S0003469X20030730

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The association between personality trait and the development of postoperative complications in enterostomized patients. Systematic review of literature.

AIM: To investigate the presence of association between the personality trait and the onset of postoperative complications in patients undergoing enterostomy packaging.

MATERIALS AND METHODS: Systematic review of the literature.

RESULTS: Type D personality traits and those with a low tendency to optimism and temperament (ex. anxiety-depressive syndrome) would seem to be associated with an increased risk of developing postoperative psychiatric morbidity and reduced levels of health-related quality of life (HRQoL) in enterostomized patients for colorectal cancer (CRC). Also, type-D personality, has been associated with greater risk of multiple comorbidities including an increased risk of heart failure unrelated to other sociodemographic causes³²⁻³⁴⁻³⁵. Personality with little tendency to optimism may represent a predictive factor on the development of psychological suffering one year after the diagnosis of CRC³. Patients with personality traits associated with reduced levels of life satisfaction and / or reduced coping capacity require longer hospitalization time²⁶.

DISCUSSION: Several studies highlight the presence of association between personality traits oriented to performance, persistence and extroversion and outcomes in various areas of surgery^{14,2,-27,30}. However, in almost all cases, the outcomes measured do not correspond to the early post-operative complications defined in the inclusion criteria but to medium-long term psychological and rehabilitative outcomes.

CONCLUSIONS: From the review study, no sources were found concerning the association between the personality trait and the onset of early postoperative complications in enterostomized patients, highlighting, furthermore, a lack of data on the subject involving the entire field of abdominal surgery.

KEY WORDS: Personality trait, Enterostomy, Post-operative complications

Pervenuto in Redazione Giugno 2019. Accettato per la pubblicazione Settembre 2019

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Introduction

The estimated volume of surgery performed worldwide each year is approximately 313 million (mln.) of surgical operations of which more than 230 mln. of major

surgery^{1,2}. In most cases the risk related to the surgical procedure is low³, however postoperative complications remain an important cause of death^{4,5} highlighting the importance of two factors representative of the quality of care provided: early recognition and correct management of postoperative complications⁶. In Italy, in 2016, the expenditure for the care and rehabilitation functions, which also included the costs incurred for surgical therapy, was 82,032 mln. of euro, equal to 54.9% of total health expenditure^{7,8}. In the common clinical practice the definition of the psychological profile does not fall within the variables investigated for the purpose of the preoperative evaluation of the patients who are candidates for surgery, being limited only to some realities such as, for example, in the evaluation of suitability for the inclusion in the list of candidates organ transplantation⁹⁻¹¹. The experiences of people with personality disorders, their families and professionals involved in assisting them, suggest incorporating psychological treatment into a comprehensive care program with a multidisciplinary and integrated approach¹². The care of the psychological component is a decisive and indispensable part of care models based on a multidimensional and multidisciplinary approach¹³. The nature and strength of a possible association between individual psychological variables and quality of postoperative outcomes would still seem poorly defined. The predominant role that the psychological component assumes in patients with enterostomy, relating to the alteration of the body image that follows, could identify them as a target population for the conduct of future observational studies useful for understanding whether certain preoperative psychological variables can influence on the quality of the postoperative course in terms of incidence of early complications.

PERSONALITY TRAIT

There is no definition of a univocal and shared personality, however, all the authors agree on a peculiar characteristic of this aspect of the individual: stability over time. According to psychologist Hans Eysenck, a scholar of personality structure, this can be defined as: *“the more or less stable and lasting organization of a person’s character, temperament, intellect and body: organization that determines the its total adaptation to the environment”*¹⁴. The traits are opposed to the “states”, defined as transitory dispositions of the personality, therefore subject to changes. Consequently, the personality is given by the sum of the traits of an individual that would be able to explain the observed behaviour.

BACKGROUND

The information available in the literature regarding the evaluation of psychological variables as determinants of

post-surgical outcomes is fragmentary and rather heterogeneous. Several studies have addressed the issue from the association between psychological variables and quality of outcomes following orthopaedic surgery^{15,6}, both in relation to rehabilitative outcomes¹⁷ and regarding patient satisfaction¹⁸⁻²¹. Anthony et al. investigated the association between health-related quality of life (HRQoL) and onset of post-surgical complications in patients undergoing colorectal cancer surgery²². The analysis of the data showed a greater occurrence of complications, both minor (surgical wound infections, prolonged ileus, urinary retention) and major ones (anastomotic dehiscence, haemorrhages with the use of blood transfusion, pulmonary embolism), in patients with low HRQoL scores. In a recent study conducted in two hospitals in the Southeast Ethiopian area, the high prevalence of preoperative anxiety was observed in patients who were candidates for surgery²³. This evidence becomes even more relevant if related to the results obtained in other studies that have documented how high and prolonged levels of preoperative anxiety are related to: slower wound healing, higher doses of anaesthetics, greater pain perception, nausea, vomiting, tachycardia, hypertension and increased risk of infection²⁴⁻²⁷. Several primary²⁸⁻³⁰ and secondary³¹⁻³³ studies have explored the psycho-social components that characterize the experience of colorectal cancer patients by studying their influence on the perception of the HRQoL. Among the psychological variables investigated, certain personality traits would seem to influence the ability to adapt to the disease in patients with colorectal cancer.

AIM

The purpose of the present review work is to investigate the presence of association between personality trait and the development of early postoperative complications in patients undergoing elective abdominal surgery for enterostomy packaging.

Materials and Methods

PROTOCOL

Systematic review of the literature according to the PRISMA Statement 2009 method³⁴⁻³⁶ Annex.

INCLUSION CRITERIA

All studies were included in the review, without any time limit, conducted on adult individuals (19 + years), of both sexes, belonging to any ethnicity and religious belief, subjected to elective abdominal surgery for packaging of enterostomy (duodenostomy, jejunostomy, ileostomy, colostomy), temporary or definitive, per-

TABLE I - List of postoperative complications considered as outcome for the inclusion of the studies in the review.

Postoperative complications	
Bleeding (with need for re-operation)	Cardiological complications
Anastomotic dehiscence (vascular, intestinal, biliary)	– cardiac arrest
Dehiscence / infection of the surgical wound	– ventricular and / or supra-ventricular arrhythmias
Pulmonary complications:	– persistent severe arterial hypertension
– pulmonary embolism	Postoperative acute pancreatitis
– respiratory failure	Rejection of a transplanted organstenosi anastomosi chirurgica gastro-enterica
– pleural effusion	Nutritional deficiency related to persistent emesis/nausea/loss of appetite
– nosocomial pneumonia	Bowel obstructionurinary tract infections
Deep vein thrombosis (DVT)	
Sepsis / septicemia	

formed with laparotomic or laparoscopic technique. Was not considered an exclusion criterion the presence of any comorbidities and / or underlying pathologies (ex. diabetes mellitus, arterial hypertension, COPD, etc.) except for those affecting the nervous system that can be considered as possible causes of state alterations of consciousness, orientation and / or functional deficits capable of altering normal postoperative recovery (ex. Alzheimer’s disease, Parkinson’s disease). In order to reduce possible selection bias, studies conducted on patients with established psychiatric disorders previously undergoing neurosurgical surgery were not considered suitable for eligibility, since they were considered at risk of having developed alterations in the cognitive / behavioural sphere following the intervention itself. Only articles published in English or Italian have been revised. The outcomes considered relevant for the purposes of data extraction refer to early postoperative organic / metabolic / surgical complications, described below in table 1. The term “early” means defining complications with onset from the second postoperative day until the time of discharge. It was decided not to consider the complications arising in the intraoperative period and throughout the whole of the postoperative day because they were considered difficult to associate with the personality trait but, rather, with causes directly related to the surgical procedure. Journal articles, book chapters and journal articles conducted with the following study designs were included in the review: clinical trials, controlled clinical trials, randomized controlled trials, meta-analysis, multicenter studies, observational studies, comparative studies, reviews, systematic review.

INFORMATION SOURCES

The literature search was carried out through consultation of the following electronic databases of biomedical and nursing interest: PubMed, Cinahl Complete, Scopus, Cochrane Library, Psycinfo, Ilisi, Google Scholar. In order to broaden the field of research, the analysis of the bibliographic citations of the articles subjected to

screening and the reading of the full text was also carried out with the retrieval of a further 7 bibliographical sources. When required by the database, the “equivalent arguments” and “related words” filters were used as search expanders. The bibliographic search within the databases has been updated to the month of May 2019.

LITERATURE REVIEW AND IDENTIFICATION OF STUDIES

The key words personality trait, enterostomy and postoperative complications were searched individually in the controlled vocabularies of each database, adapting the formulation of the search string to the corresponding descriptors provided by each. We have also proceeded with the identification and truncation of the synonyms terms to be able to associate the search for free terms with the descriptors. By way of example, the string used for the bibliographic search within the PubMed database is shown below in Figure 1.

Table II describes the search results obtained for each bibliographic database.

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(((“Enterostomy”[Mesh] and “Postoperative Complication”
[Mesh] and “Personality”[Mesh]))) OR (((enterostom* or cecos-
tom* or colostom* or duodenostom* or ileostom* or jejunost-
tom*) AND (complication* OR “postoperat* complication*”
OR “surg* complication*”) AND (personalit* or “personality
trait*” or “psychological trait*” or “personality assessment*” or
“psychological assessment*” or “personality type*” or “psycho-
logical type*” or “personality model*” or “psychological model*”
or “personality disorder*” or “psychological disorder*”))))

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Filters: (Humans[Mesh] AND (English[lang] OR Italian[lang]) AND adult[MeSH])

Search results

Items: 16

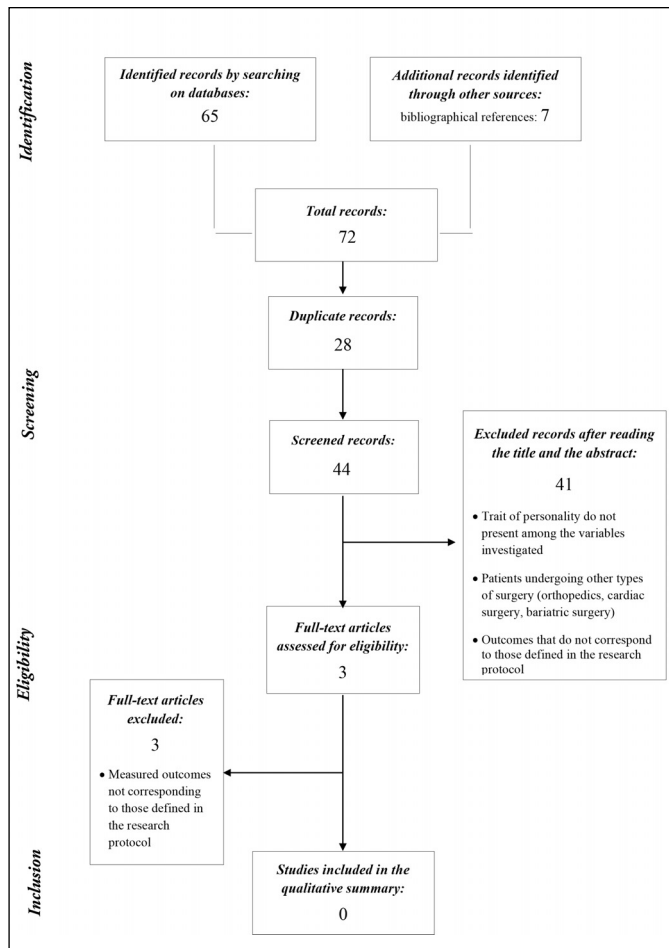
Fig. 1: Search string used in the PubMed database.

TABLE II - Data banks consulted for bibliographical research and respective number of items retrieved.

Data Base	N° Item
PubMed	16
Cinahl Complete	1
Cochrane Library	7
Scopus	10
PsycINFO	4
ILISI	0
Google Scholar	27
Total items: 65	

SELECTION OF STUDIES

Following the retrieval of the sources, the subsequent screening and selection phases of the articles are summarized in the graphic 1. The elimination of duplicates (n=28) was performed using the Mendeley Desktop 1.19.4 bibliography management software.



Graphic 1 - Flowchart of the bibliographic research.

DATA EXTRACTION AND COLLECTION

The process of extracting and collecting data took place with the help of special extraction tables structured in original form by the authors of the review (Annex 2 and 3).

CHARACTERISTICS OF THE DATA

For each source included, will be considered useful for extraction, data relating to: title, author and study design, target population (sociodemographic data, defining characteristics), tools / tests used to define the personality trait, measured outcomes (postoperative outcome), results (evidence on the association between personality trait and onset of postoperative complications).

SOURCES OF FINANCING AND CONFLICT OF INTEREST

The revision work was self-financed by the authors who jointly declare the absence of conflict of interest.

Results

SELECTION OF STUDIES

At the end of the screening phase, after reading the titles and abstracts, only three articles were considered suitable for full-text analysis. All three studies have investigated the existence of an association between psychosocial variables and responses to adaptation to the disease in patients with colorectal cancer (CRC) subjected to enterostomy packaging. Annex 2 shows the extraction table used for the analysis of the data relating to the three articles included in the review study. Depending on the review work carried out on the literature and on the limited amount of data collected regarding the association between personality trait and postoperative complications in patients undergoing abdominal surgery for enterostomy packaging, in order to provide a useful database to expand the relevant knowledge and in order to stimulate the conduct of future studies, it was decided to proceed with the critical analysis of 10 articles selected in the screening phase which, although not in line with the established inclusion criteria, dealt with the association between psychological variables (including the personality trait) and surgical outcomes. Annex 3 shows the data extraction table relating to the critical analysis of the 10 selected articles.

SUMMARY OF RESULTS

In patients with an increased risk of postoperative psychiatric morbidity, the following variables have been asso-

ANNEX 2

Author & Title	Aim	Method/Population	Independent Variable	Outcome
Thomas, C. (1986) "Psychological effects of stomas - II. Factors influencing outcome"	To investigate the existence of personal, psychosocial and preoperative disease independent variables predisposing the development of psychiatric disorders after ostomy surgery.	Observational study lasting 20 months 106 subjects underwent enterostomy packaging, of which: – 73 for intestinal cancer; – 17 for inflammatory bowel disease; – 16 for diverticular disease	The following independent variables were preliminarily evaluated for surgery: – Socio-demographic factors (sex, age, marital status, children and work status); – The severity of physical illness prior to the stoma surgery; Previous history of psychiatric illness in themselves and their families; – Received preoperative information about the stomy.	In patients with an increased risk of postoperative psychiatric morbidity, the following variables have been associated: previous psychiatric history, postoperative physical symptoms and complications, inadequate advice and personality traits of neuroticism, anxiety and obsessiveness.
Sisto, G. (1991) "Disabling outcomes and psychological disorders in the patient with an enterostomy"	To identify the most frequent debilitating outcomes and the major psychological disorders secondary to enterostomy surgery.	10-year longitudinal study conducted on sixty patients (39 males and 21 females) subjected to definitive enterostomy packaging, age: 20-86 y (mean=65 y) average duration of follow-up: 32 months (2-105 months).	Early and late complications: - urinary infection - perianal wound dehiscence - perianal fistula - colostomy prolapse - laparocoele - bowel obstruction - peristomal dermatitis Psychosocial disorders secondary to enterostomy surgery.	Postoperative morbidity (33.4%) is represented in most cases by peristomal laparocoele (28.3%), followed by intestinal obstruction and ostomy prolapse, respectively 18.3% and 10%. The psychological outcomes of the ostomy would seem to prevail over the social ones, highlighting: – 50% of patients presented depressive disorders secondary to the sense of alteration of the body image; – appearance of sexual disorders; – deterioration in social relations. The work activity and the behavioral sphere were not compromised.
Sales, Paulo M.G. (2014) "Psychosocial predictors of health outcomes in colorectal cancer: A comprehensive review"	To review the evidence regarding the potential of psychosocial factors, including body image disturbances, personality traits, coping capacities, ego defense mechanisms and other psychological dimensions, to act as predictors of CRC patients' outcomes.	Review of the literature in the electronic PubMed/ Medline databases, with inclusion of 23 articles published from 1950 to September 2013, for the research on literature available on the associations between personality characteristics, depression, psychological stress and Health Related Quality of Life (HRQoL) in patients with colorectal cancer (CRC).	Stoma/body image Type-D personality Coping Sense of Coherence (SOC) Positive and negative affect Illness perception/ behavior Temperament Alexithymia Ego defense mechanism	Patients with type-D personality tend to be more mentally influenced by the state of the disease, overestimating the consequences and presenting more adverse symptoms ³³ . Consequently, they present an increased risk of developing mental disorders following the diagnosis of CRC ³⁴⁻³⁵ . Personality with little tendency to optimism may represent a predictive factor on the development of psychological suffering one year after the diagnosis of CRC ²³ . Type-D personality has been associated with greater risk of multiple comorbidities including an increased risk of heart failure unrelated to other socio-demographic causes. This personality would also seem to be associated with an increased demand for health care ³⁴⁻³⁵ . Personality with low Temperament indices are associated with longer times in recognizing the seriousness of the symptoms related to the disease with delayed diagnosis ²⁴ . The Optimistic personality, in addition to adopting more effective coping strategies ²² , is associated with lower levels of anxiety and less development of depressive syndrome ³⁶⁻³⁷ . Furthermore, the optimistic personality in caregivers, induces lower levels of anxiety in patients during follow-up ³⁶ and reduces the risk of developing psychological distress following CRC diagnosis ²³ . Personality characterized by passive coping styles are associated with dysfunctions of some neuro-endocrine activation mechanisms with consequent immunosuppression and increased risk of cancer ³⁸ .

Annex 3 - Data extraction table. Overview on the association between personality traits and surgical outcomes (increasing order based on the year of publication).

Author & Title	Study Design	Population	Instrument	Outcome	Results
Glen, A.L.M. (1968) "Psychological factors, and operative procedures, and results of surgery for duodenal ulcer"	Mixed Controlled Randomized	Groups A e B: A) patients with chronic gastroduodenal ulcer who have undergone one of the following surgical procedures for at least 8 years: 1- Polya's partial gastrectomy; 2- Vagotomy with gastro-jejunal anastomosis. B) Patients with chronic gastroduodenal ulcer NOT subjected to surgery Group C: Patients undergoing Vagotomy with gastro-jejunal anastomosis within 14 days of surgery	EPI (Eysenck Personality Inventory - forms A and B) MMPI-2 (Minnesota Multiphasic Personality Inventory)	- ulcer recurrence (group C); frequency and severity of food symptoms (altered nutrition, nausea, dyspepsia). impact of bariatric surgery on quality of life (QoL); size of weight loss.	Personality tending to introversion (-0.24 *) and / or to neuroticism (+ 0.23 *) or with mood disorders, such as depressive syndromes (+ 0.34 *), are associated with low correlation indices to worse long-term outcomes (gastro-intestinal disorders), compared to normal psychological profiles; The C group patient's "late positive" results in the insulin-acid secretion test obtained significantly higher scores (14) in the personality trait related to neuroticism compared to patients with negative outcome (11.7) in the insulin-secretion test sour.
Vallis, T.M. (1993) "The role of psychological factors in bariatric surgery for morbid obesity"	Review	Patients undergoing bariatric surgery.	MMPI (Minnesota Multiphasic Personality Inventory) MCMI (Millon Clinical Multiaxial Inventory)	time of admission; use of analgesic therapy.	21 studies included in the review : 10 studies have investigated the predictive value of psychological variables on post-surgical outcomes measured on the basis of the size of weight loss achieved; 5 studies: no association between psychological variables investigated and the size of weight loss after bariatric surgery; 5 studies: presence of predictive association between 2 psychological variables (depression and personality disorders) and the size of weight loss following bariatric surgery.
Kopp, M. (2003) "Life satisfaction and active coping style are important predictors of recovery from surgery"	Prospective Controlled	109 adult patients undergoing different types of surgery with general anesthesia: incision of abscess, hernioplasty, cholecystectomy, gastrectomy. 58 women; 51 men Age mean: 46.2 years (SD ±16; range 18-78)	FPLR (Freiburg Personality Inventory-Revised)	organ rejection; mortality.	Patients who developed post-surgical complications, requiring longer hospital stays, have reduced pre-operative personality analysis (α -Cronbach = 0.71-0.84), reduced life satisfaction levels (score 4.7; SD 1.6) and reduced coping skills (score 4.2; SD 1.1); Presence of a strong correlation between post-surgical recovery without complications and the following variables related to the personality trait: Life satisfaction; Extraversion; Orientation to the realization.

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<p>Denollet, J. (2007) "Unfavorable outcome of heart transplantation in recipients with type D personality"</p>	<p>Prospective</p>	<p>51 heart transplant patients. 13 women; 38 men Age mean: 54.1 (SD ± 9.7; range 26-74)</p>	<p>DS 14 Scale</p>	<p>-The type D (Distressed) personality, associated with the Neuroticism trait, is an independent predictive index of increased mortality risk in the short and long term: - in patients with type D patients who were still hospitalized, a 4-fold higher mortality rate was observed compared to non-D patients (p = 0.025); - in patients with non-hospitalized type D personalities, a mortality rate 10 times higher was shown compared to non-D patients (p = 0.008); - the first episode of rejection in patients with type D personality was diagnosed on average 14 days after transplantation, unlike non-D patients where on average the first episode of rejection was observed after day 50 of transplantation (p = 0.032). -The personality trait tending to extroversion is an independent predictor of lower duration of hospitalization (LOS - Length Of Stay) in patients undergoing surgery for colorectal cancer (β = -0.318, p = 0.05).</p>
<p>Sharma, A. (2007) "Patient personality predicts postoperative stay after colorectal cancer resection"</p>	<p>Prospective</p>	<p>104 patients with colorectal cancer undergoing elective resective surgery. 70 men, 44 women Age mean: 67.6 years (SD ±10.4; range 39-86)</p>	<p>FACT-C (Functional Assessment of Cancer Therapy for Colorectal cancer patients)</p>	<p>-Low scores on the K-scale of the MMPI-2, significant for a personality trait poorly tending to defensiveness and disease denial, are associated with significant weight loss at 1 month (p = 0.019), 2 months (p = 0.004), 3 months (p = 0.009) and 6 months (p = 0.005) from surgery.</p>
<p>Belanger, S.B. (2010) "Predicting outcome of gastric bypass surgery utilizing personality scale elevations, psychosocial factors, and diagnostic group membership"</p>	<p>Prospective</p>	<p>143 patients subjected to gastric ByPass according to Roux-en-Y. 120 women, 23 men</p>	<p>EPQ-R (Eysenck Personality Questionnaire-Recent form) MMPI-2 (Minnesota Multiphasic Personality Inventory) MCMII (Millon Clinical Multiaxial Inventory)</p>	<p>-Statistically significant differences in the clinical course of patients in relation to the respective personality trait; -Personality traits tending to extroversion (Choleric & Optimistic) showed better functional outcomes (r = 0.62; p = 0.040); -The neurotic-melancholic personality trait was found to be associated with a worse functional recovery (SF-36 PCS = -0.62; p = 0.018); -High levels of extroversion are positively correlated with higher scores on the outcomes evaluation scales, therefore with better post-operative outcomes.</p>
<p>Gong, L. (2014) "Patient's personality predicts recovery after total knee arthroplasty: a retrospective study"</p>	<p>Retrospective</p>	<p>387 patients who underwent total knee arthroplasty. 278 women; 109 men Age mean: 20-80 years</p>	<p>EPQ (Eysenck Personality Questionnaire) 7days after surgery</p>	<p>degree of satisfaction and score of joint function in patients undergoing total knee arthroplasty measured with: - SF36 (Short-form Health Survey); - WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index)</p>
<p>Gordon, P.C. (2014) "The impact of temperament and character inventory</p>				

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<p>personality traits on long-term outcome of Roux-en-Y gastric bypass”</p> <p>Giurea, A. (2016) “The impact of personality traits on the outcome of total knee arthroplasty”</p> <p>Shin, J. E. (2016) “A personality trait contributes to the occurrence of postoperative delirium: a prospective study”</p>	<p>Prospective</p> <p>Cohort study</p> <p>Prospective</p>	<p>333 patients underwent gastric bypass according to Roux-en-Y. 282 women; 51 men Age mean: 35.4 (SD ± 9.5)</p> <p>86 patients, without mental disorders and / or in treatment with psychotropic drugs or alcoholics or drug addicts, subjected to total knee arthroplasty. 48 women; 32 men Age mean: 66 years (range 54-81)</p> <p>78 patients undergoing surgery for hip fracture. age >70</p>	<p>TCI (Temperament and Character Inventory)</p> <p>FPI-R (Freiburg Personality Inventory-Revised)</p> <p>MMSE (Mini-Mental State Examination)</p>	<p>size of weight loss calculated in% EWL.</p> <p>long-term satisfaction in patients undergoing total knee arthroplasty.</p> <p>presence of post-operative delirium starting from the 8th post-operative day.</p>	<p>–A low score in the “Persistence” personality stretch is related to low %EWL (Percent of Excess Weight Loss) at 2 years (% EWL = 0.21; p = 0.011) from surgery and / or at the last follow-up visit up performed (% EWL = 0.14; p = 0.028).</p> <p>–Four personality traits were able to influence patient satisfaction: satisfactory life (p = 0.006), performance orientation (= 0.015), somatic discomfort (= 0.001), emotional stability (= 0.002).</p> <p>Presence of association between post-operative delirium and: low score MMSE = 16,6 (5.7); RR 0.88 (95% CI: 0.81-0.96); personality trait strongly tending to neuroticism; personality trait scarcely conducive to Conscientiousness.</p>
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ciated: previous psychiatric history, postoperative physical symptoms and complications, inadequate advice and personality traits of neuroticism, anxiety and obsessiveness³⁷. In according to Sales et al.³⁸, specific personality traits can play an important role in the psychological adaptation to colorectal cancer patients. Patients with type-D personality tend to be more mentally influenced by the state of the disease, overestimating the consequences and presenting more adverse symptoms³⁹. As a result, they present an increased risk of developing mental disorders following the diagnosis of CRC and are also associated with increased demand for health care^{40,41}. Furthermore, type-D personality has been associated with greater risk of multiple comorbidities including an increased risk of heart failure unrelated to other sociodemographic causes^{40,41}. Personality with little tendency to optimism may represent a predictive factor on the development of psychological suffering one year after the diagnosis of CRC²⁹. Type-D personality has been associated with greater risk of multiple comorbidities including an increased risk of heart failure unrelated to other socio-demographic causes. Personality with low temperament indices are associated with longer times in recognizing the seriousness of the symptoms related to the disease with delayed diagnosis³⁰. The Optimistic personality, in addition to adopting more effective coping strategies²⁸, is associated with lower levels of anxiety and less development of depressive syndrome^{42,43}. Furthermore, the optimistic personality in caregivers, induces lower levels of anxiety in patients during follow-up⁴² and reduces the risk of developing psychological distress following CRC diagnosis²⁹. Personality characterized by passive coping styles are associated with dysfunctions of some neuro-endocrine activation mechanisms with consequent immunosuppression and increased risk of cancer⁴⁴. According to the study conducted by Sharma et al.⁴⁵, the personality trait tending to extroversion can be considered an independent predictor of lower duration of hospitalization (LOS-Length of Stay) in patients undergoing surgery for colorectal cancer ($\beta = -0.318$; $p = 0.05$).

Discussion

ANALYSIS OF EVIDENCE

The studies conducted by Thomas³⁷, Sisto⁴⁶ and Sales³⁸ regarding the role of psycho-social variables, including the personality trait, on the quality of the outcomes following the packaging of enterostomies focus their analysis on HRQoL and on the onset of psychological and behavioural disorders capable of negatively affecting the experience of this category of patients, without however treating the possible association between personality trait and the onset of postoperative complications early defined in the protocol of the present study. However, it is important to highlight how personality with traits

tending to neuroticism, anxiety and obsessiveness are independent variables associated with the development of postoperative psychiatric morbidity³⁷. The study by Sisto et al.⁴⁶, in agreement with previous studies, confirms that the packaging of enterostomies may determine negative psychological and social outcomes resulting from the alteration of the body image, but does not provide useful data relating to the association between personality trait and development of post-operative complications. In fact, the most frequent postoperative complications described in the study by Sisto et al.⁴⁶, (peristomal laparocoele (28.3%), intestinal obstruction (18.3%) and ostomy prolapse (10%)), are interpreted as independent variables with respect to the psychological variables that are considered as possible causes for the development of psychological disorders in the patient with an enterostomy. In the study conducted by Glen⁴⁷, the bidirectional analysis of variance between psychological variables and outcomes of surgery showed a statistically significant difference between patients who presented negative outcomes of lesser severity (from the 1st to the 3rd degree) and those who have developed more serious outcomes (IV degree). Sharma et al.⁴⁵ investigated the predictive power of personality on length of stay (LOS) in patients undergoing colon resection for cancer. The analysis of the data identified the presence of postoperative morbidity ($\beta=0.379$; $p=0.007$) and/or a personality trait tending to extroversion ($\beta=0.318$; $p=0.05$) as independent predictors of LOS. In particular, the negative correlation coefficient related to extroversion ($r= -0.252$; $p=0.01$) shows an inverse correlation with LOS, indicating that this personality trait is associated with a shorter length of stay. However, the mechanisms underlying this association have not been identified although some authors suggest a possible explanation for a better tolerance to pain in people with a predominantly extroverted personality trait, as well as the predisposition to the use of active coping strategies^{48,49}.

LIMITATIONS OF THE STUDY

Assuming that none of the sources subjected to data analysis proved to be suitable because it was not relevant to the established inclusion criteria, it was not possible to develop all the items required by the PRISMA protocol (Annex 1) relating to the assessment of methodological quality and internal risk of bias of the studies subjected to critical analysis (items n° 12,15,19,22). Furthermore, the strong heterogeneity of the variables investigated did not allow the aggregation and meta-synthesis of the data (items n° 13,14,16,21,23). The personality trait does not represent the main independent variable in all studies and is often associated with other psychological and non-psychological variables, exposing the analysis of the results to possible confounding biases.

Annex 1 - Checklist of items to include when reporting a systematic review.

Section/Topic	#	Checklist Item	Reported on Page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome-level assessment (see Item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., health care providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

Source: Adapted from: Moher D, Liberati A, Tetzlaff J, et al. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA Statement. *PLoS Med* , 2009 Jul; 6(7): e1000097. Available from: <https://dx.plos.org/10.1371/journal.pmed.1000097>.

Conclusions

The review study did not reveal any sources that investigated the presence of association between personality trait and postoperative complications in patients undergoing enterostomy packaging, highlighting a lack of knowledge on the subject worthy of further study. Specifically, no study was considered suitable for inclusion based on the following reasons:

1) The study population was subjected to surgery not of abdominal surgery and / or not for enterostomy packaging (Denollet, 2007; Gong, 2014; Giurea, 2016; Shin, 2016);

2) The outcomes measured do not match those defined in the research protocol as they relate to the length of stay (Kopp, 2003; Sharma, 2007), to rehabilitative or psychosocial outcomes (Thomas, 1986; Sisto, 1991, Sales, 2014; Glen, 1968; Vallis, 1993; Gong, 2014; Gordon, 2014; Belanger, 2010), to complications with late onset (Glen, 1968);

3) The tests and scales used for the definition of personality are multiple and different among the various studies conducted, showing, in addition, some intrinsic differences relating to differences in the choice of psychological variables taken into consideration for the definition of the personality trait. However, the influence on the surgical outcomes of some psychological determinants^{18,50-52}, such as the orientation to performance and persistence, typical of personality with a tendency to extroversion, would seem to be confirmed by several studies. High levels of extraversion would also seem to be associated with a greater degree of postoperative satisfaction and, consequently, with higher scores in the outcome evaluation scales^{17,53}.

It would therefore be desirable to conduct further studies with the aim of investigating the existence of association between personality trait and the development of postoperative complications in patients undergoing surgery, with reference to enterostomized patients for the predominant psychological component that characterizes them.

IMPLICATIONS FOR CLINICAL PRACTICE

The collected data provided useful information to reinforce the conviction of the importance that the psychological aspect assumes, in its different components and dimensions⁵⁴, in pre and post surgery patients treatment⁵⁴, pointing out the importance and needs of carrying out as soon as possible further primary studies to help clarify the actual existence of correlation between psychological variables related to the personality trait and the development of surgical complications. The identification of one or more personality traits that can be classified as “*increased risk of complications*”, in addition to encouraging the systematic evaluation of the psychological profile of patients who are candidates for surgery, The identification of one or more personality traits that

can be classified as “*increased risk of complications*”, as well as encouraging the systematic evaluation of the psychological profile of the patients who are candidates for the intervention, would encourage the realization of specific clinical-care pathways, characterized by from diagnostic-therapeutic interventions implemented for preventive purposes and having multidimensional and multidisciplinary characteristics. Early identification of these patients would allow to address them to the right specialist (psychiatrist / psychologist) needed, favouring their inclusion in treatment programs as early as admission until discharge. Any current health intervention, aimed at increasing postoperative compliance and adherence to active coping strategies in patients with a personality trait at risk^{12,54-58}, could materialize in the provision of pharmacological and / or behavioral therapy treatments aimed at correcting behavioral disorders considered to be possible risk factors for the development of postoperative complications. The effectiveness of this intervention would be measurable through the reduction in the incidence of postoperative complications with obvious benefits in terms of decreased morbidity / mortality, reduction of length of stay, cutting of costs related to the treatment of complications.

Riassunto

PRESUPPOSTI TEORICI: Un'accurata raccolta dei dati anamnestici ed un'attenta interpretazione degli esami laboratoristici e strumentali rappresentano elementi indispensabili per il corretto inquadramento diagnostico-terapeutico e per una stima affidabile del rischio individuale di pazienti candidati a chirurgia. Al contrario, lo studio delle variabili psicologiche definenti la struttura cognitiva e comportamentale di ogni singolo paziente, non sembra rappresentare parte integrante della valutazione preoperatoria in pazienti candidati a chirurgia addominale, risultando limitato solo ad alcune specifiche realtà come, ad esempio, nel riconoscimento di idoneità per l'inserimento in lista ai fini di trapianto d'organo⁹⁻¹⁰. Le esperienze delle persone con disturbi della personalità, delle loro famiglie e dei professionisti impegnati ad assisterli, suggeriscono di incorporare il trattamento psicologico all'interno di un programma di cura complessiva ad approccio multidisciplinare ed integrato¹². L'influenza delle variabili psicologiche sulla qualità degli outcomes chirurgici risulta quindi meritevole di ulteriori approfondimenti.

SCOPO: Lo scopo del presente lavoro di revisione è quello di indagare la presenza di associazione tra tratto di personalità e lo sviluppo di complicanze postoperatorie precoci in pazienti sottoposti a chirurgia addominale elettiva per confezionamento di enterostomia.

METODO: In seguito ad individuazione delle parole chiave “personality trait”, “enterostomy” e “post-operative complications” ed alla formulazione di una stringa di

ricerca ottenuta tramite associazione di termini liberi e termini appartenenti ai vocabolari controllati di ogni singola banca dati, è stata condotta una revisione sistematica della letteratura secondo metodo Prisma Statement 2009³⁴⁻³⁶. Il reperimento delle fonti è stato condotto interrogando le maggiori banche dati bibliografiche di interesse biomedico ed infermieristico (PubMed, Cinahl Complete, Scopus, Cochrane Library, PsycINFO, ILISI, Google Scholar).

RISULTATI: Sebbene diversi autori abbiano evidenziato la relazione tra tratto di personalità ed esiti chirurgici, nessuno di questi ha fornito risposte pertinenti al quesito di ricerca proposto, mostrando difformità con i criteri di inclusione stabiliti. Le fonti reperite focalizzano la loro analisi sull'associazione tra tratto di personalità e la qualità della vita correlata allo stato di salute (HRQoL) e sull'insorgenza, nel periodo postoperatorio, di disturbi psicologici e comportamentali in grado di condizionare negativamente il vissuto in questa categoria di pazienti. Tuttavia, è possibile affermare che: 1) Personalità con tratti tendenti al nevroticismo, all'ansia e all'ossessività rappresentano variabili indipendenti associate ad un rischio aumentato di sviluppare morbilità psichiatrica postoperatoria; 2) Pazienti con tratto di personalità associato a ridotti livelli di soddisfazione di vita (4.7; SD 1.6) e/o ridotte capacità di coping (4.2; SD 1.1) richiedono tempi di degenza più lunghi; 3) Il tratto di personalità tendente all'estroversione è un indice predittivo indipendente di minor durata del ricovero ($p=0.05$) in pazienti sottoposti a resezione colica per cancro colo-rettale.

CONCLUSIONI: La scarsa disponibilità di fonti disponibili sull'associazione tra componenti psicologiche ed esiti della chirurgia evidenzia la presenza di un'area grigia di conoscenze a riguardo suggerendo la conduzione di ulteriori studi primari con disegno adeguato a tale scopo. Il forte impatto psicologico, caratteristico della patologia oncologica, in associazione all'alterazione dell'immagine corporea secondaria a confezionamento di enterostomia, identifica questa categoria di pazienti quale possibile popolazione target per lo svolgimento di futuri studi prospettici in merito.

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