



ISSN: 2091-2749 (Print)  
2091-2757 (Online)

#### Correspondence

Xue Hao  
Department of Nursing  
Minimal Invasive Surgery Unit  
Renji Hospital  
School of Medicine  
Shanghai Jiaotong University  
Shanghai, China  
Email: xuehao018@gmail.com

#### Peer Reviewers

Asst. Prof. Dr. Sumana  
Bajracharya  
Patan Hospital, PAHS

Asst. Prof. Dr. Ashis Shrestha  
Patan Hospital, PAHS

## Self-rating depression during early postoperative period after colostomy following radical surgery for rectal cancer

Xue Hao,<sup>1</sup> Ma Liying,<sup>1</sup> Zhong Ming,<sup>2</sup> Jay Shah<sup>3</sup>

<sup>1</sup>Department of Nursing, <sup>2</sup>Professor of Surgery and Head of Department, <sup>3</sup>Visiting Professor of Surgery; Minimal Invasive Surgery Unit, Renji Hospital, School of Medicine, Shanghai Jiaotong University, Shanghai, China

### ABSTRACT

**Introductions:** Colorectal cancer (CRC) is 3<sup>rd</sup> most common cancer. Half of which requires colostomy. It leads to anxiety and depression with less than optimal quality of life. Zung Self-rating Depression Scale is a reliable tool used in Chinese population for identifying and addressing mental health status for appropriate education. The aim of this study is to investigate the depression state in rectal cancer patients after colostomy, then analyze its influence factors.

**Methods:** A cross sectional study in rectal cancer patients who had colostomy after radical surgery for rectal cancer were investigated for depression during early postoperative period within one week using Zung's self-rating depression scale (SDS). Multiple logistic regression analysis was done to identify the risk factor.

**Results:** There were 55 colostomies patients (male 30 and female 25 patients, age 50.11+/-13.17 years) after rectal cancer surgery during the study period. The SDS score of was higher than national norm (P<0.01). The risk factors for depression were female gender, younger age, lower economic status, and lesser degree of understanding of the disease.

**Conclusions:** The depression level of rectal cancer patients after colostomy was higher than normal population, especially in female, young age, with poor understanding of disease and lower economy status. The effective measures should be targeted to strengthen the health psychosocial health of these patients.

**Keywords:** colorectal cancer, colostomy, early postoperative depression, Zung self-rating depression score SDS

## INTRODUCTIONS

Colorectal cancer (CRC) is on the rise due to westernized diet and is 3<sup>rd</sup> most common cancer and 2<sup>nd</sup> cancer related death in the United States.<sup>1</sup> Incidence of CRC is increasing in China, with estimated 300,000 new cases in 2015, half requiring colostomy.<sup>2,3,4</sup> The CRC at 23.03/100,000 (male 25.83 and female 20.08; urban areas 28.25 and in rural 17.54) ranked 4<sup>th</sup> for all cancer sites, and 7.09% deaths in China.<sup>5</sup> In Asia, CRC is 3<sup>rd</sup> most common malignancy with higher incidence among Chinese.<sup>6</sup> Colostomy leads to anxiety and depression with less than optimal quality of life (QOL).<sup>7</sup>

Zung SDS<sup>8</sup> is a reliable and valid tool, also used in Chinese population.<sup>9-12</sup> Identifying and addressing their perceptions and mental health status for appropriate education for mastery of colostomy improves the QOL.<sup>13</sup>

Using Zung SDS, we aim to analyze the depression during early postoperative within a week after colostomy for future intervention plan to improve the QOL of ostomate.

## METHODS

This was a cross sectional study at colorectal surgery department of Renji Hospital, Jiao Tong University, Shanghai, China, during January 2016 to December 2016. The inclusion criteria were patients in the ward one week after radical resection of rectal cancer (Miles surgery) with colostomy, histopathological diagnosis of cancer, primary school or above education, no history of mental illness, willing to participate in the survey. The exclusion criteria were history of cancer metastasis to other organs, known systemic disease, and unstable vital signs.

Patients were given printed questionnaire to be filled by themselves. Patients and family were explained of their rights to deny participating in the study without any effect on their care in the hospital. They were

assured that the information was solely for research purpose and not be disclosed. Those patients who had difficult to write, the investigators read the questions to let the patients choose answers. The questionnaire took about 15 minutes to complete and was collected on the spot by the researcher. The data included gender, age, marital status, educational level, economic status, and the degree of understanding of the disease. The study was approved from the hospital authority and a waiver for ethical committee as the study was non-interventional survey.

We used Zung self-rating depression scale with 20 items questionnaire<sup>8,11</sup>, with four choices- never, sometimes, frequently, and always adding up the crude score between 20 and 80 which was multiplied by 1.25 to obtain standard score (standard score = crude score \*1.25), and higher the score higher the degree of depression.

The SPSS 15.0 was used. Patients' demography was analyzed descriptively. The SDS score was compared with national norm by single T test, and multiple regression for factors causing depression.

## RESULTS

There were 55 patients, male 27 and female 28, average age 50.11+/-13.17, (Table 1). The score of SDS (48.38 +/- 6.35) was significantly higher than national norm (41.88 +/- 10.57),  $T= 7.59$ ,  $P<0.01$ . Multivariate regression analysis showed depression was significantly related to disease understanding, gender, age and economic status ( $p<0.01$ ). Multivariate stepwise regression analysis showed that patients depression were significantly related to disease understanding, gender, age and economic status ( $p<0.01$ ), (Table 2).

Patients understanding of disease correlated negatively with the degree of depression, higher the understanding lower the depression, and the correlation coefficient of depression in the 4 groups was  $F=31.842$ , ( $P<0.01$ ) (Table 3).

**Table 1. Demographic data of patients with colostomy (N=55) after rectal cancer surgery**

Items	Items	N	%
Gender	Male	27	49.1
	Female	28	50.9
Age in years	25-40	11	20.0
	41-60	33	60.0
	61-80	11	20.0
Marital Status	Married	20	36.4
	Divorced	21	38.2
	Widow	14	25.4
Education	Primary School	12	21.8
	Middle School	21	38.2
	High School	13	23.6
	University	9	16.4
Economic Status (Family Income RMB/month)	<5000	6	10.9
	5000-10000	17	30.9
	10000-15000	27	49.1
	>15000	5	9.1
Understanding of Disease	Very well	15	27.2
	Well	20	36.4
	General	11	20.0
	Do not understand	9	16.4

**Table 2. Multivariate stepwise regression analysis of depression factors in patients with colostomy (N=55) after rectal cancer surgery**

Independent variable	B	beta	t	p
Understanding of disease	-1.998	-0.327	-2.869	<0.01
Gender	2.760	0.219	3.133	<0.01
Age	-2.354	-0.237	-2.870	<0.01
Economic situation	-2.711	-0.346	-3.178	<0.01

**Table 3. Comparison of depression scores SDS with understanding of disease among four groups of patients with colostomy (N= 55) after resection of rectal cancer**

Patient understanding of disease	N	SDS Depression score (x+/-S)
Very well	15	42.40±4.75
Well	20	46.80±2.65
General	11	52.45±2.77
Do not understand	9	56.89±5.40

Note: Depression factor of variance among 4 groups was  $F=31.842$ ,  $P<0.01$

## DISCUSSIONS

Our finding suggests early postoperative within a week after colostomy following radical resection of rectal cancer the depression was high significantly high with SDS score of  $48.38 \pm 6.35$  (than national

norm of  $41.88 \pm 10.57$ ,  $T=7.59$ ,  $P<0.01$ ). The depression symptoms were high with less understanding of disease, female gender, younger age and poor economic status ( $p<0.01$ ), (Table 2).

The psychosocial issues are important for QOL of colostomy patients with improved survival.<sup>14-16</sup> Colostomy patients have fear of loss of control of defecation, leakage, odor, skin irritation, change in appearance and image, and feel dejected. In a survey 120 colostomy patients with rectal cancer QOL was  $60.4 \pm 22.8$ , significantly lower than the norm ( $P < 0.01$ ) and advocated need of specialized nursing care to provide psychosocial support.<sup>17</sup>

Lower understanding of disease had significant relation ( $P < 0.01$ ) with depression in our study (Table 3, 4). Misunderstanding or no understanding, the intestine pulled out on abdomen, abnormal body image, sense of inferiority, all add to the depression. Women were more prone for post colostomy depression, (Table 3) possibly due to more sensitive to body image, and worry of dejection by family and society. In a health-related QOL in 118 stomach, colon, and rectal cancer patients in Chinese People's Liberation Army General Hospital, Beijing, China, using various scores including SDS and Social Support Requirement Scale (SSRS) found anxiety and depression were associated with cancer diagnosis, treatment, and gender.<sup>18</sup>

Younger age is more liable to depression, as our result suggests (Table 3). The work, social life and active interpersonal relation of young age patient may be adversely affected by stoma and more prone to depression. In a study from two acute hospitals in Hong Kong on 96 patients found that the self-efficacy was important factor for QOL of ostomate and vulnerable to depression due to loss of an bodily function and distortion of self-image.<sup>19</sup> Colostomy patients have to bear the cost of stoma appliances for lifelong may contribute to depression, lower the economic status higher the depression (Table 3). Similar findings are reported in a recent study of ostomy supplies and payment method as significant factor for the QOL study on temporary enterostomy patients in five hospitals in Guangdong Province, China and the Veterans Affairs Ostomy Health-Related QOL Study in USA.<sup>20,21</sup>

Development of stoma care in China has been mainly confined to hospital based inpatients and outpatients services which need to expand in to the community. Integration of standardized multidisciplinary team including specialized stoma nurses, clinicians, and psychotherapists from the early period of diagnosis and treatment plan is important to improve the quality of colorectal cancer treatment.<sup>22</sup>

In a randomized controlled in Guangdong China on 103 colostomy patients found that enterostomal nurse telephone follow-up can improve patient ostomy adjustment level and related psychosocial outcomes.<sup>23</sup>

In a comparative study in Beijing, China, the extension of hospital services for colostomy patients in the community, found that the QOL of colorectal cancer survivors improved effectively by 'medical institutions-community service model'.<sup>24</sup>

The quality of life of ostomate can be improved by identifying and addressing perceptions and mental health for appropriate education for mastery of colostomy care.<sup>7,13</sup>

Our findings of higher level of symptoms of depression during early postoperative period of stoma after radical surgery for rectal cancer affirm the need of specialized care for these patients. The possible limitations of our study could be the single center with limited sample not fully representative of all colostomy patients. Study on multicenter with larger sample, with different stomas, at different postoperative period may provide better inference.

## CONCLUSIONS

Our findings suggest that colostomy causes higher rate of depression in early post-operative period. Poor understanding about the disease, female gender, young age and lower economic status were related to depression. Health education may prevent high rate of depression in colostomy patients.

Table 4. Zung Self-Rating Depression Scale (SDS) 20 item questionnaire modified<sup>14</sup>

Dear patients and family, thank you for your support to improve the quality of our work to understand your current psychological conditions. so that we can find solution to promote your mental and physical health. Please spend 10-15 minutes to complete the questionnaire. You have all the rights to deny to participate. (a) Basic patient information: Age; Gender; Education level- primary, middle, high school, university; Marital status; Monthly household income (RMB); Understanding of disease- very well, well, general, do not understand. Your personal information will be used only for research purpose and will not be disclosed. (also provided in Chinese).	A little of the time	Some of the time	Good part of the time	Most of the time
	偶有	少有	常有	持续
1. I feel down-hearted and blue我觉得闷闷不乐、情绪低沉				
2. Morning is when I feel the best我觉得一天之中早晨最好				
3. I have crying spells or feel like it我一阵哭出来或者觉得想哭				
4. I have trouble sleeping at night 我晚上睡眠不好				
5. I eat as much as I used to我吃的跟平常一样多				
6. I still enjoy sex我与异性接触性交时和以往一样感到愉快				
7. I notice that I am losing weight我发觉我的体重在下降				
8. I have trouble with constipation我有便秘的苦恼				
9. My heart beats faster than usual我心跳比平时快				
10. I get tired for no reason我无缘无故地感到疲乏				
11. My mind is as clear as it used to be我的头脑跟平常一样清楚				
12. I find it easy to do the things I used to我觉得经常做的事情并没有困难				
13. I am restless and can't keep still.我觉得不安而平静不下来				
14. I feel hopeful about the future我对将来抱有希望				
15. I am more irritable than usual我比平常容易生气激动				
16. I find it easy to make decisions我觉得作决定是容易的				
17. I feel that I am useful and needed我觉得自己是个有用的人·有人需要我				
18. My life is pretty full我的生活过得很有意思				
19. I feel that others would be better off if I were dead我认为如果我死了·别人会生活得好些				
20. I still enjoy the things I used to do平常感兴趣的事我仍然感兴趣				

## REFERENCES

- Centers for Disease Control and Prevention. United States cancer statistics: 2004 incidence and mortality. Executive Summary. Available from: [http://www.cdc.gov/cancer/NPCR/npcrpdfs/uscsc\\_2004\\_executive\\_summary.pdf](http://www.cdc.gov/cancer/NPCR/npcrpdfs/uscsc_2004_executive_summary.pdf)
- Dai Z, Zheng RS, Zou XN, et al. Analysis and prediction of colorectal cancer incidence trend in China. *Chin J Prev Med.* 2012;46(7):598-603. (In Chinese). Available from: <https://europepmc.org/abstract/med/22943913> PMID: 22943913.
- Sargent DJ, Goldberg RM, Jacobson SD, et al. A pooled analysis of adjuvant chemotherapy for resected colon cancer in elderly patients. *N Engl J Med.* 2001;345(15):1091-7. DOI: [10.1056/NEJMoa010957](https://doi.org/10.1056/NEJMoa010957)
- Chen W, Zheng R, Baade PD, Zhang S, Zeng H, Bray F, Jemal A, Yu XQ, He J. Cancer statistics in China, 2015. *CA: A Cancer Journal for Clinicians.* 2016;66(2):115-32. PMID: [26808342](https://doi.org/10.3322/caac.21338). DOI: <https://doi.org/10.3322/caac.21338>
- Liu S, Zheng R, Zhang M, Zhang S, Sun X, Chen W. Incidence and mortality of colorectal cancer in China, 2011. *Chinese Journal of Cancer Research.* 2015;27(1):22-8. DOI: [10.3978/j.issn.1000-9604.2015.02.01](https://doi.org/10.3978/j.issn.1000-9604.2015.02.01)
- Pourhoseingholi MA, Vahedi M, Baghestani AR. Burden of gastrointestinal cancer in Asia: an overview. *Gastroenterology and Hepatology From Bed to Bench.* 2015;8(1):19-27. PMID: [25584172](https://pubmed.ncbi.nlm.nih.gov/25584172/), PMID: PMC4285928
- Geng Z, Howell D, Xu H, Yuan C. Quality of life in Chinese persons living with an ostomy: a multisite cross-sectional study. *Journal of Wound Ostomy & Continence Nursing.* 2017 May 1;44(3):249-56. DOI: [10.1097/WON.0000000000000323](https://doi.org/10.1097/WON.0000000000000323)
- Zung WW. A self-rating depression scale. *Archives of General Psychiatry.* 1965;12(1):63-70. DOI: [10.1001/archpsyc.1965.01720310065008](https://doi.org/10.1001/archpsyc.1965.01720310065008).
- Lee HC. Reliability, validity and fakability of the Zung Self-rating Depression Scale. *Bulletin of the Hong Kong Psychological Society.* 1990;24-25:5-15. <http://psycnet.apa.org/record/1991-26213-001>
- Liu XC, Ma DD, Kurita H, Tang MQ. Self-reported depressive symptoms among Chinese adolescents. *Soc Psychiatry Psychiatr Epidemiol.* 1999;34(1):44-7. DOI: <https://doi.org/10.1007/s001270050110>
- Lee HC, Chiu HF, Wing YK, Leung CM, Kwong PK, Chung DW. The Zung self-rating depression scale: screening for depression among the Hong Kong Chinese elderly. *Journal of Geriatric Psychiatry and Neurology.* 1994;7(4):216-20. PubMed: [7826489](https://pubmed.ncbi.nlm.nih.gov/7826489/). DOI: <https://doi.org/10.1177/089198879400700404>
- Shen LL, Lao LM, Jiang SF, Yang H, Ren LM, Ying DG, Zhu SZ. A survey of anxiety and depression symptoms among primary-care physicians in China. *The International Journal of Psychiatry in Medicine.* 2012;44(3):257-70. DOI: <http://dx.doi.org/10.2190/PM.44.3.f>
- Knowles SR, Tribbick D, Connell WR, Castle D, Salzberg M, Kamm MA. Exploration of health status, illness perceptions, coping strategies, psychological morbidity, and quality of life in individuals with fecal ostomies. *Journal of Wound Ostomy & Continence Nursing.* 2017;44(1):69-73. DOI: [10.1097/WON.0000000000000295](https://doi.org/10.1097/WON.0000000000000295).
- Jemal A, Bray F, Center MM, Center, MM, et al. Global cancer statistics. *CA: A Cancer J Clin.* 2011;61(2):69-90. DOI: <https://doi.org/10.3322/caac.20107>
- Arndt V, Merx H, Stegmaier C, et al. Quality of life in patients with colorectal cancer 1 year after diagnosis compared with the general population: a population-based study. *J Clin Oncol.* 2004;22(23):4829-36. DOI: [10.1200/JCO.2004.02.018](https://doi.org/10.1200/JCO.2004.02.018)
- Jansen L, Herrmann A, Stegmaier C, et al. Health-related quality of life during the 10 years after diagnosis of colorectal cancer: a population-based study. *J Clin Oncol.* 2011;29(24):3263-9. DOI: [10.1200/JCO.2010.31.4013](https://doi.org/10.1200/JCO.2010.31.4013)
- Wei-Wei S, Ping C, Fa-Mei B. Investigation on life quality of patients with rectal cancer undergoing colostomy and influencing factors. *Journal of Clinical Nursing.* 2013;1:001. Available from: [http://en.cnki.com.cn/Article\\_en/CJFDTotallCHL201301001.htm](http://en.cnki.com.cn/Article_en/CJFDTotallCHL201301001.htm)
- Muhong Deng, Yanhong Lan, Shali Luo. Quality of life estimate in stomach, colon, and rectal cancer patients in a hospital in China. *Tumor Biology.* 2013;34(5):2809-15. DOI: [10.1007/s13277-013-0839-3](https://doi.org/10.1007/s13277-013-0839-3)
- Wu HK, Chau JP, Twinn S. Self-efficacy and quality of life among stoma patients in Hong Kong. *Cancer Nursing.* 2007;30(3):186-93. DOI: [10.1097/O1.NCC.0000270704.34296.86](https://doi.org/10.1097/O1.NCC.0000270704.34296.86)

20. Su X, Zhen L, Zhu M, Kuang Y, Qin F, Ye X, Yin X, Wang H. Determinants of self-efficacy and quality of life in patients with temporary enterostomy: a cross-sectional survey. *Journal of Clinical Nursing*. 2017;26(3-4):477-84. DOI: <https://doi.org/10.1111/jocn.13469>
21. Coons SJ, Chongpison Y, Wendel CS, Grant M, Krouse RS. Overall quality of life and difficulty paying for ostomy supplies in the Veterans Affairs ostomy health-related quality of life study: an exploratory analysis. *Medical Care*. 2007;45(9):891-5. DOI: [10.1097/MLR.0b013e318074ce9b](https://doi.org/10.1097/MLR.0b013e318074ce9b)
22. Yang AH, Yan M, Qin YH. The development status of specialized nursing in ostomy care both in China and abroad. *Chinese Nursing Research*. 2016;3(3):117-20. DOI: <https://doi.org/10.1016/j.cnre.2016.06.014>
23. Zhang JE, Wong FKY, You LM, Zheng MC, Li Q, Zhang BY, Huang MR, Ye XM, Liang MJ, Liu JL. Effects of enterostomal nurse telephone follow-up on postoperative adjustment of discharged colostomy patients. *Cancer Nursing*. 2013;36(6):419-28. DOI: [10.1097/NCC.0b013e31826fc8eb](https://doi.org/10.1097/NCC.0b013e31826fc8eb).
24. Zhang ZG, Zhao LB, Zhang Y, et al. Quality of life for colorectal cancer survivors in medical institutions-community service model. (Chinese). *Chinese General Practice*. 2013;17:011. [http://en.cnki.com.cn/Article\\_en/CJFDTOTAL-QKYX201317011.htm](http://en.cnki.com.cn/Article_en/CJFDTOTAL-QKYX201317011.htm)