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Original Article

Role of Emotion Regulation and Fear of Compassion on Depression and Anxiety in Patients with Colorectal Cancer

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ABSTRACT

Objective: Maladaptive emotion regulation (ER) styles act as transdiagnostic mechanisms that underlie many psychiatric symptoms linked to cancer. ER and fear of compassion (FC) were studied in breast cancer, but their effects on psychiatric symptoms of colorectal cancer (CRC) patients are not studied. We aim to examine the role of ER and FC on depression and anxiety in Turkish CRC patients.

Methods: This observational, cross-sectional study recruited 38 patients with CRC who were being followed up by the general surgery department of a university hospital. Emotion Regulation Questionnaire, Fear of Compassion Scale, the Exercise of Self-care Agency Scale, Hospital Anxiety and Depression Scale, Distress Thermometer, Numeric Pain Intensity Scale, and Ostomy Adjustment Inventory were applied. Multiple regression analyses were performed to identify factors affecting depression and anxiety levels.

Results: Twenty-nine men and 9 women (median age=56.5, 28–69), most of whom were married and highly educated, were recruited. Expressive suppression (p=0.013) and pain (p=0.010) positively (Model, R^2=0.42, p<0.001) and self-care agency (p=0.021) negatively influenced anxiety levels. Expressive suppression (p=0.017) and male gender (p=0.020) positively influenced depression levels (Model, R^2=0.28, p=0.003). There was no association between cognitive reappraisal and levels of depression and anxiety. Among ostomates (n=17), 11 patients had low and 6 patients had medium adaptation to an active ostomy. No patient exhibited high adjustment to an ostomy.

Conclusion: Findings indicate that in CRC patients, expressive suppression affects levels of anxiety and depression while cognitive reappraisal does not. FC was not found to be related to anxiety and depression. Physicians should carefully observe the patients' and the caregivers' ER strategies and the dynamic and interactive psychological states to understand which patients need psychological and psychiatric interventions. We suggest future studies explore the interventions that target expressive suppression patterns to prevent anxiety and depression in CRC patients.

INTRODUCTION

Colorectal cancer (CRC) stands third in incidence and second in mortality among cancer types.[1] It plays an important place in physical and psychosocial problems.[2] One-fifth of CRC patients were reported to have depression and anxiety[3] that were shown to be correlated with emotion regulation (ER) patterns.[4]

ER corresponds to a group of mechanisms that help individuals modify how they perceive and communicate their emotions. From two main ER patterns, cognitive reappraisal (CR) means altering our appraisal of a situation to reduce its emotional effect, and expressive suppression involves deliberately inhibiting experiencing emotions and emotion-expressive behavior.[5] Lack of access to and expression of emotions appropriate to an experience "interfere" with problem-solving and effective communication in close relationships.[6] Furthermore, ER represents a framework explaining adaptation to and coping with cancer.[7] Maladaptive ER patterns act as a transdiagnostic mechanism that underlie many psychiatric symptoms and psychological suffering linked to cancer.[8] ER and its effect on

mental health outcomes were explored mostly in breast cancer[8–10] and studies including mixed types of cancer[11] but scarcely reflected in the CRC literature. Baziliansky and colleagues recruited CRC patients and demonstrated a link between ER, psychological distress and coping,[12] but to the best of our knowledge, no study to date examined the link between ER and anxiety and depression in CRC.

Fear of compassion (FC) means intentionally avoiding participating in compassionate, nonjudging experiences or behaviors. It has been linked with experiencing emotions, depression, anxiety, and stress.[13] Lower levels of self-compassion, with an elevated propensity to be self-critical, have been observed to link with cancer-related distress.[14] Trindade and colleagues have described that the fear of receiving compassion from others significantly predicts depression in patients with breast cancer and suggested that cancer patients' ability to receive compassion and emotional support from others is to be evaluated in the psychological screening.[15]

Two studies[12,16] addressed both ER and FC in CRC patients, but they did not explore the relationship with psychopathology. Thus, this research intends to fill this gap by examining the role of ER and FC on depression and anxiety in Turkish CRC patients. The findings are expected to support practitioners to be aware of the important correlates of anxiety and depression in Turkish CRC survivors.

MATERIALS AND METHODS

Patients and Setting

In this cross-sectional study, CRC patients with and without ostomy being followed up by the department of general surgery of a university hospital were recruited from July 2019 to October 2020. The inclusion criteria were ages 18–70 years, for patients who were recently operated on, being at least 4 weeks postsurgery to ensure that they were physically stable enough to complete the questionnaires and for patients who have an ostomy, to allow them to adjust to the new condition. Fifty-six patients were invited. One patient who could not engage in completing the questionnaires, 1 patient who had brain metastasis, 1 patient who had schizophrenia, and 15 patients who did not accept to participate due to the severity of their symptoms were excluded. For patients who were over 65 years old, the Mini-mental Status Examination was performed by a trained psychologist (YD) to screen for cognitive impairment. Informed consent was obtained from each participant after the procedure had been fully explained. Ethical clearance was obtained from the university ethics committee for human research (2018.325.IRB2.051).

Measures

Demographic and clinical characteristics

Sociodemographic data were collected. Clinical information was obtained from the patients' clinical charts.

Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HAD) was used as it was appropriate to measure anxiety and depression levels in patients with physical illness. The cutoff scores for the Turkish form were 10 for its anxiety subscale (HAD-A) and 7 for the depression subscale (HAD-D). Cronbach's alpha coefficient of HAD-A was 0.85 and HAD-D was 0.78.[17]

Emotion Regulation Questionnaire

Emotion Regulation Questionnaire (ERQ) was used to assess ER. Responses range from a strong disagreement to a strong agreement on a 7-point Likert-type scale. It includes 10 items assessing ER strategies: cognitive reappraisal (6 items) (e.g., "I regulate my feelings by adjusting the way I think about the situation I'm in") and expressive suppression (4 items) (e.g., "I control my emotions by not expressing them"). Cronbach's alpha coefficients for the cognitive reappraisal and expressive suppresion subscales of the Turkish adaptation of ERQ were 0.78 and 0.73, respectively.[18]

Fears of Compassion Scale

A 5-point Likert-type Fears of Compassion (FC) Scale includes subdimensions of fear of expressing compassion for others (FCForOthers), fear of responding to compassion from others (FCFromOthers), and fear of compassion for self (FCSelf). After confirmatory factor analysis, 38 items in the original were reduced to 35 items in the adapted Turkish form. Cronbach's alpha coefficients of FCForOthers, FCFromOthers, and FCSelf were 0.92, 0.83, and 0.93, respectively.[19]

The Exercise of Self-care Agency Scale

The Exercise of Self-care Agency Scale (ESCA) is a 5-point Likert-type scale that includes 43 items to measure the self-care ability of the individual. Scores range from 0 to 4, with a total score of 35–140. Turkish validity and reliability were reorganized as 35 items with Cronbach's alpha value of 0.89.[20]

Ostomy Adjustment Inventory

Adjustment to an active ostomy was assessed by Ostomy Adjustment (OA) Inventory. The 23-item 5-point Likert-type (0–4 points) scale determines the level of compliance to ostomy within 4 subdimensions: acceptance, anxious preoccupation, social engagement, and anger. Higher scores indicate better adjustment. The reliability coefficient for the overall Turkish form of the scale was 0.87 and the total correlation coefficient obtained by the test–retest method was calculated as 0.77. The questionnaire's cumulative score was 0–80 points (<40 points: low level of adaptation; 40–60 points: medium level of adaptation; >60 points: high level of adaptation).[21]

Numerical Pain Intensity Scale

With the Numerical Pain Intensity Scale, patients circle the number between 0 and 10 that better matches their pain intensity. Zero is "no pain at all" while 10 is "the worst pain ever imaginable."[22]

Distress thermometer

Distress during last week was assessed by the distress thermometer with ratings from 0 (no distress) to 10 (extreme distress) displayed with a familiar image of a thermometer. In the validated Turkish form, the cutoff score was found to be 4, and sensitivity (0.77) and specificity levels were good (0.68).[23]

Statistical analysis

The data were analyzed using SPSS 26.0 for Windows. To define the sample, number and proportion for categorical variables, and "median (min-max)." for non-normal distributed variables were calculated. The variables were examined using the Shapiro–Wilk test to assess whether they were normally distributed. The patient groups were compared based on the distribution and type of data, with the Mann–Whitney U test and the the chi-square test using a threshold of $p<0.05$ to control for type I error. Spearman's tests were used to analyze the correlations. Variables that had significant associations with depression and anxiety levels ($p<0.05$) were further explored with multiple regression analyses to determine the significant factors that affect the outcome variables of anxiety and depression levels separately.

RESULTS

Sociodemographic, clinical, and psychological characteristics

Sociodemographic and clinical characteristics are summarized in Table 1. Six patients were on selective serotonin reuptake inhibitors for either a depressive disorder or an anxiety disorder. Eleven patients have considerable levels of distress (score ≥4 out of 10). Men have higher levels of distress, depression, FCFromOthers, FCSelf, and FCTotal compared with women. The psychological characteristics of males and females with CRC are listed in Table 2.

Factors that impact anxiety and depression levels

Factors that impact anxiety levels in CRC patients are summarized in Table 3. Given their significant correlations with anxiety, ESCA, expressive suppression, and pain were further explored as factors affecting anxiety levels in the multiple regression model controlling for gender, age, marital, socioeconomic, and education status, and duration after the operation. ESCA, expressive suppression, and pain stayed in the model when multiple regression was conducted (Table 3).

Table 1. Sociodemographic and clinical characteristics of the patients

	(n=38)	
Age (years), median (min–max)	56.5	(28–69)
Gender (male), n (%)	29	76.3
	n	**%**
Marital status		
Married	32	84.2
Single	2	5.3
Divorced	4	10.5
Educational level		
Elementary school	9	23.7
High school	5	13.2
University and higher	24	63.1
Occupation		
Not working	22	57.9
Working	16	42.1
Income per month		
Lowest	8	21.1
Low	13	34.2
Medium	7	18.4
Upper	10	26.3
Comorbid physical disease		
At least one disease	27	71.1
Two and more	11	28.9
Comorbid psychiatric disorders	9	23.7
Any anxiety disorder	3	7.9
Depressive disorder	3	7.9
Insomnia disorder	2	5.3
Other	1	2.6
Type of adjuvant treatment		
Chemotherapy	7	18.4
Radiotherapy	0	0
No adjuvant treatment	31	81.6
Cancer site		
Rectosigmoid	2	5.3
Sigmoid	1	2.6
Rectal	35	92.1
Time since operation, median (min–max)	14	1–144
Clinical stage		
0	7	18.4
I	9	23.7
II	5	13.2
III	9	23.7
IV	8	21.1
With ostomy	17	44.7

min–max: minimum–maximum.

The associations of the same psychological variables with depression levels were explored with univariate analysis. Expressive suppression and gender were further explored as factors affecting depression levels in the multiple regression model controlling for age, marital, socioeco-

Table 2. Psychological characteristics of males and females with colorectal cancer

	Males (n=29), median (min–max)	Females (n=9), median (min–max)	p
Age	57.0 (28–67)	53.0 (32–69)	0.582
Distress	3.0 (0–9)	0.0 (0–3)	0.035*
Pain	1.0 (0–9)	1.0 (0–7)	0.652
Depression	5 (0–15)	2 (0–8)	0.014*
Anxiety	6 (0–11)	7 (0–10)	0.849
FCForOthers	17 (2–29)	15 (5–19)	0.071
FCFromOthers	21 (5–36)	13 (4–29)	0.027*
FCSelf	18 (4–45)	14 (2–17)	0.009*
FCTotal	61 (13–105)	40 (11–61)	0.004*
Exercise of Self-care Agency	104 (69–129)	112 (56–136)	0.460
Emotion Regulation (expressive suppression)	18.50 (4–32)	16 (8–28)	0.489
Emotion Regulation (cognitive reappraisal)	30.0 (16–36)	28 (17–35)	0.319
Time after the operation	14.0 (1–144)	14.0 (1–31)	0.931

Mann–Whitney U test. *P<0.05. FCForOthers: fear of compassion for self for others. FCFromOthers: Fear of compassion from others. FCSelf: Fear of compassion for self; FC: Fear of compassion.

Table 3. Factors that affect anxiety levels in patients with colorectal cancer

	Anxiety					
	Univariate analysis			Multiple regression (reduced)		
	r	p	B	SE	t	p
Age	−0.27	0.105				
Distress†	0.317	0.053				
Pain†	0.487	0.002**	0.432	0.158	2.729	0.010
Exercise of self-care agency	−0.398	0.013*	−0.057	0.024	−2.425	0.021
FCForOthers	0.014	0.932				
FCFromOthers	0.032	0.850				
FCSelf	0.199	0.230				
FCTotal	0.093	0.579				
Emotion regulation						
Expressive suppression	0.363	0.025*	0.185	0.071	2.614	0.013
Cognitive reappraisal	−0.043	0.797				
Gender‡		0.849				
Duration after the operation	−0.246	0.137				
Stage of disease†	0.001	0.994				
R^2					0.42	
F					7.873	

*P<0.05; **p<0.01. †Spearman's correlation. ‡Mann-Whitney U test. FCForOthers: Fear of compassion for others. FCFromOthers: Fear of compassion from others; FCSelf: Fear of compassion for self; FC: Fear of compassion.

nomic, and education status, and time after the operation. Expressive suppression and gender stayed in the model when stepwise multiple regression was conducted (Table 4).

Ostomy adjustment

Among ostomates (n=17), 11 patients had low and 6 patients had medium adaptation to an active ostomy. No patient had a high OA.

DISCUSSION

The present study aimed to fill the gap by answering the question of whether ER patterns and FC are factors that impact anxiety and depression levels in Turkish CRC patients. We have found that expressive suppression predicted anxiety and depression levels while CR did not. Contrary to anticipations, FC and its subdimensions were not related to the levels of anxiety and depression.

Table 4. Factors that affect depression levels in patients with colorectal cancer

	Depression					
	Univariate analysis		Multiple regression (reduced)			
	r	p	B	SE	t	p
Age	−0.300	0.067				
Distress†	0.304	0.063				
Pain†	0.301	0.066				
Exercise of self-care agency	−0.244	0.140				
FCForOthers	0.059	0.725				
FCFromOthers	0.103	0.540				
FCSelf	0.224	0.177				
FCTotal	0.189	0.255				
Emotion regulation						
Expressive suppression	0.391	0.015*	0.243	0.097	2.517	0.017
Cognitive reappraisal	0.073	0.663				
Gender		0.014*	−3.149	1.294	−2.434	0.020
Duration after the operation	−0.297	0.070				
Stage of disease†	0.182	0.275				
R^2					0.28	
F					6.784	

*P<0.05. †Spearman's correlation. ‡Mann-Whitney U test. FCForOthers: Fear of compassion for others. FCFromOthers: Fear of compassion from others; FCSelf: FCSelf: Fear of compassion for self; FC: Fear of compassion.

The finding on the impact of expressive suppression on anxiety and depression levels matches those studies in breast cancer[8,9,24] and a study that recruited patients with different cancer sites.[25] Likewise, women who expressed emotions to cope with breast cancer reported fewer depressive symptoms compared with women with low emotional expression.[4] However, Cohen demonstrated higher emotional suppression predicted lower self-reported psychological distress on the distress thermometer, the total HAD, and HAD-D scores, but not the HAD-A score.[11] It seems likely that the discrepancy in the results is due to the properties of the tools used to measure ER as well as the patient population in their study who had different cancer types.[11]

As a theoretical framework, the emotion-as-social-information model may help us understand the findings. In his model, Van Kleef argued that emotion does not just regulate the behavior of the individual but also the behavior of those nearby.[26] Patients with CRC are usually in need of caregiving from their loved ones. Suppressing their emotional expressions may be aiming to avoid affecting their loved ones. Notwithstanding, as expressive suppression was found to positively affect anxiety and depression in our study, we frame expressive suppression as a maladaptive coping strategy.

Arens and colleagues compared expressive suppression and CR in healthy and depressive Turkish and German women. They demonstrated healthy Turkish women frequently used both expressive suppression and cognitive reappraisal – ER flexibility – which was associated with better outcomes in Turkish women than in German women. Specific cultural characteristics seem to moderate the intensity and consequences of expressive suppression.[27] Our study contributes to the literature by showing the characteristics and impact of ER in Turkish CRC patients.

Current findings of no relations of CR with anxiety and depression corroborate the studies by Guimond and colleagues on breast cancer.[8,9] However, findings are not consistent with the study that demonstrated a link between CR and lower levels of depression and anxiety.[25] This difference may arise from the fact that Peh and colleagues recruited newly diagnosed cancer patients of various types. Our study included only patients with CRC, and the duration since diagnosis in the current study was longer. Similar to the current findings, a meta-analytical review demonstrated the effect sizes for the relationships between CR and anxiety and CR and depression as small to medium; however, the effect sizes for the relationship between suppression and anxiety and suppression and depression were medium to large. These findings suggested that psychopathology may correlate more closely with maladaptive ER strategies than adaptive ones.[28] To the best of our knowledge, only Baziliansky and colleagues explored, in CRC patients, the link between ER patterns and personal resilience and self-compassion, but they did not study the link between anxiety and depression.[16]

No association between FC and depression and no association between FC and anxiety were not in line with a previous study. Trindade and colleagues showed FCFromOthers impacted depression severity in breast cancer patients.[15] In noncancer, moderate to severe depressive patients, FC were reported to be related to depression as

well.[29] Our contradicting result may be explained by the small sample size of the current study.

The association of the male gender with increased depression levels in CRC patients matched the study that showed a greater risk of depression in men with early non-metastatic CRC[30] and another study.[3] However, the latter study suggested being male was associated with less anxiety.[3] We could not find any association of gender with anxiety in Turkish CRC patients. An explanation could be, although women, in general, tend to have greater anxiety and depression symptoms than men,[31] the low number of women with CRC in the current study may not represent the females in the general population. Although FCFromOthers, FCSelf, and distress levels were higher in men compared with women, they did not affect depression and anxiety levels.

Pain was a factor positively affecting anxiety levels in line with the study which demonstrated anxiety as more of a concern for cancer patients with pain relative to patients without pain.[32]

The best coping approach to the chronic condition of cancer is suggested to be self-care, which is characterized by self-observance, marking symptoms, assessing their seriousness, selecting treatment choices, and determining the efficacy of self-care.[33] The negative association between ESCA and anxiety was anticipated and in line with the literature.[34] Furthermore, the study by Miao and colleagues noted that depression was also negatively related to self-care agency, but they recruited only patients with gastric cancer, which might explain the discrepancies in the findings.[35]

The current findings have practical significance. Careful observation of the patient and the caregiver's ER strategies and the dynamic and interactive psychological states forming could give hints on who needs psychological interventions. The current phase of cancer needs to be considered as well. Transdiagnostic emotion regulation therapy (ERT) was shown to help young adult cancer survivors enhance self-regulation and improve overall cancer adjustment.[36] There is likely abundant space for further progress of ERT for the prevention and treatment of depressive and anxiety disorders in CRC survivors.

Limitations and challenges

Our results could be viewed in the light of a variety of limitations. First, this is a small sample, single-center study. The cross-sectional and descriptive design hampered drawing causal relationships. Psychiatric diagnoses were provided based on the self-report of the patient, and anxiety and depression levels were measured by only self-report scales. The findings of the current study may not apply to very early-stage or terminal-stage cancer patients. However, it contributed to the body of limited literature on ER in CRC. On a different note, HAD scale does not directly evaluate the depression and anxiety's somatic components, which could be mistakenly attributed primarily to cancer. Therefore, it is a reliable measurement of depression and anxiety in cancer patients.

The particular challenge in carrying out this study was recruiting patients. Several patients declined to participate and indicated their lack of energy as the main reason. We suggest working with an experienced and qualified nurse who is mindful of the psychological challenges of patients and caregivers. We believe this would be of great help in creating a positive encounter between the patient and nurse that will facilitate participation in the study and enhance patient-centered care.

CONCLUSION

The present research adds to the current literature by demonstrating expressive suppression predicts anxiety and depression levels; however, CR and FC are not related to anxiety and depression levels in Turkish CRC patients. Prospective investigations in larger samples and different cultures should replicate our results to establish the impact of ER patterns. We suggest that studies focus on intervening expressive suppression to prevent anxiety and depression and explore the efficacy of transdiagnostic ER-specific, culturally sensitive interventions for anxiety and depression in CRC patients.

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Ethics Committee Approval

This study approved by the Koç University Biomedical Research Ethics Committee (Date: 30.11.2018, Decision No: 2018.325.IRB2.051).

Informed Consent

Prospective study.

Peer-review

Internally peer-reviewed.

Authorship Contributions

Concept: O.K., M.Y.I., K.K., E.B.; Design: O.K., M.Y.I., K.K., O.A.; Supervision: O.K., E.B., K.K.; Data: O.K., I.H.O., M.Y.I., Y.D., T.T., A.S.; Analysis: O.K., M.Y.I.; Literature search: O.K., I.H.O., Y.D., A.S., T.T.; Writing: O.K., M.Y.I.; Critical revision: O.K., I.H.O., M.Y.I, Y.D., T.T., A.S., O.A., K.K., E.B.

Conflict of Interest

None declared.

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Kolorektal Kanser Hastalarında Emosyon Düzenleme ve Şefkat Korkusunun Depresyon ve Anksiyete Üzerindeki Rolü

Amaç: Uyumsal olmayan emosyon düzenleme biçimleri, kanserle ilişkili psikiyatrik belirtilerin altında yatan tanılar üstü mekanizmalar olarak rol oynar. Emosyon düzenleme ve şefkat korkusu meme kanseri hastalarında incelenmiştir ancak kolorektal kanser hastalarında psikiyatrik belirtiler üzerine etkileri araştırılmamıştır. Emosyon düzenleme ve şefkat korkusunun depresyon ve anksiyete üzerindeki rolünü Türk kolorektal kanser hastalarında incelemeyi amaçladık.

Gereç ve Yöntem: Bu gözlemsel, kesitsel çalışmaya, bir üniversite hastanesinin genel cerrahi bölümü tarafından takip edilen 38 kolorektal kanser hastası alındı. Emosyon Düzenleme Ölçeği, Şefkat Korkusu Ölçeği, Özbakım Gücü Ölçeği, Hastane Anksiyete ve Depresyon Ölçeği, Distres Termometresi, Sayısal Ağrı Derecelendirme Ölçeği, ve Stomaya Uyum Envanteri uygulandı. Depresyon ve anksiyeteyi etkileyen faktörleri belirlemek için çoklu regresyon analizleri yapıldı.

Bulgular: Çalışmaya çoğu evli ve yüksek eğitimli (medyan yaş= 56.5, 28–69) olan 29 erkek, 9 kadın alındı. Anksiyete düzeyleri üzerine dışavurumu bastırma ($p=0.013$) ve ağrının ($p=0.010$) etkisi pozitif, özbakım gücünün ($p=0.02$) etkisi negatifti (Model, $R^2=0.42$, $p<0.001$). Depresyon düzeyleri üzerineyse dışavurumu bastırma ($p=0.017$) ve erkek cinsiyet ($p=0.020$) pozitif yönde etki etmekteydi. (Model, $R^2=0.28$, $p=0.003$). Bilişsel yeniden değerlendirme ile depresyon ve ve anksiyete arasında ilişki saptanmadı. Stomaya uyum aktif stomalı hastaların (n=17) 11'inde düşük, altısında ortaydı. Stomaya yüksek uyum gözlenmedi.

Sonuç: Sonuçlar, kolorektal kanser hastalarında dışavurumu bastırmanın anksiyete ve depresyon düzeylerini etkilediğini, bilişsel yeniden değerlendirmenin ise bu düzeyleri etkilemediğini göstermiştir. Şefkat korkusu anksiyete ve depresyonla ilişkili bulunmamıştır. Hekimler, hangi hastaların psikolojik veya psikiyatrik müdahaleye ihtiyaç duyduğunu anlamak için hasta ve bakımverenin emosyon düzenleme biçimlerini ve dinamik ve etkileşimli psikolojik durumlarını dikkatle gözlemelidir. Gelecek çalışmaların kolorektal kanser hastalarında anksiyete ve depresyonu önlemek için dışavurumu bastırma paternini hedef alan müdahaleleri araştırmasını öneririz.

Anahtar Sözcükler: Baskılama; kanser; kolorektal kanser sağ kalanlar; psikoonkoloji; şefkat; yeniden değerlendirme.