



Obstructive uropathy due to prolapsed lower ureters and bladder in patients with severe procidentia: A report of two cases

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ABSTRACT

INTRODUCTION: Pelvic organ prolapse is not uncommon in multi-parous or elderly women. It is one of the rare but important causes of obstructive uropathy. Herein, we report two cases of severe procidentia that were referred with obstructive uropathy due to prolapsed bladder and ureters.

PRESENTATION OF CASE: The first case was a 78-year-old woman, with severe pelvic organ prolapse and secondary bilateral hydroureteronephrosis and post-renal failure. She was treated successfully by bilateral nephrostomy insertion and then pessary insertion. The second case was a 75-year-old woman who referred with the same presentation, but treated surgically with burch colposuspension and synchronous bilateral ureteral stent insertion.

DISCUSSION: Pelvic organ prolapse is not uncommon in old women. In addition to physical problems of procidentia, it may cause acute renal failure (ARF), chronic renal failure (CRF), and finally end stage renal disease (ESRD) if undiagnosed.

CONCLUSION: In every aged female case with obstructive uropathy and/or bilateral hydroureteronephrosis with unknown causes, gynecologic examination should be performed for early detection of possible pelvic organ prolapse. Appropriate management is necessary to prevent renal failure from uterine prolapse (UP).

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1. Cases report

1.1. Case 1

A 78-year-old woman was presented to emergency room by nausea, vomiting, malaise and a visible significant protruded mass in the external genital examination (Fig. 1).

The general physical examination was unremarkable. The patient body mass index (BMI) was 27. In pelvic examination, the bladder was empty and Foley urethral catheterization was impossible. Early laboratory examinations were performed. She had a serum BUN of 126 mg/dl, and creatinine level was 14 mg/dl. Further evaluations by abdomino-pelvic ultrasonography revealed severe bilateral hydroureteronephrosis with un-detectable bladder. Emergency hemodialysis was done for her by peripheral temporary access.

After evaluations of patient's coagulation status with serum PT, PTT, INR, and injection of single dose prophylactic intravenous antibiotic,¹ bilateral percutaneous insertion of nephrostomy tubes were done successfully under local anesthesia. Appropriate urinary drainage was occurred. Urine output was 8 L in the first 24 h.

Appropriate fluid infusion was done with replacement of two thirds of urinary output for the management of the post obstructive diuresis. In the fourth day the serum creatinine level was decreased to 1.2 mg/dl after nephrostomy.

In the fifth day, bilateral nephrostography via nephrostomy tubes were done, and bilateral hydroureteronephrosis with prolapsed bladder was detected (Fig. 2).

Preoperative urodynamic study (UDS) was not possible due to disturbed bladder anatomy.

The patient was referred for gynecologic consultation. Vaginal pessary was inserted and UP was treated successfully. Two weeks later nephrostomy tubes were removed uneventfully.

For the follow up, 6 months later, the renal function tests (RFT) were normal and renal ultrasonography was unremarkable.

1.2. Case 2

The patient was a 75-year-old grand multiparous woman who was referred due to bilateral hydroureteronephrosis. She complained about weakness and malaise since few months ago. Physical examination was unremarkable except generalized pallor due to mild anemia. Her BMI was 23. Gynecologic examination revealed severe procidentia that bothered patient since years before. In laboratory examination, Hg was 10 g/dl and creatinine level was 3 mg/dl. In abdominopelvic ultrasonography, bilateral moderate hydronephrosis with near normal renal cortical thickness

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Frequency of Suicide Ideation and Attempt in HIV Infected Patients Referred to Behavioral Health Counseling Centers of Rafsanjan (RUMS) and Kerman University of Medical Sciences (KUMS)

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Abstract

Background: Suicidal behavior and HIV/AIDS are considered as significant public health concerns. HIV infection has been associated with elevated risk of suicidal ideation. **Methods and Materials:** Cross-sectional descriptive research design was used to record socio-demographic data of this study. Suicidal ideation scale BECK was used to determine and measure the frequency of suicide ideation and attempt in HIV infected (HIV⁺) persons referred to behavioral health counseling center of Rafsanjan University of Medical Sciences (RUMS) and Kerman University of Medical Sciences (KUMS) in 2012. **Results:** Men had more suicidal ideation than women after the diagnosis of infection with HIV. More cases of HIV positive persons with duration of less than 10 and more than 14 years, and most cases of less than 40 years-old had suicidal ideation. There was no significant difference between suicidal ideation in HIV-infected individuals and factors such as gender, age, and duration of HIV-infection ($P > 0.05$). **Conclusion:** Suicidal ideation and attempt is common in HIV infected patients which needs more assessment and prevention. [GMJ. 2015;4(1):33-38]

Key Words: Suicidal ideation; Suicide attempt; HIV; Health centers; Frequency



Non – Detection of HPV DNA in Prostatic Cancer and Benign Prostatic Hyperplasia: a case- control study in Kerman

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Abstract

Background: Different studies assessed the role of inflammation in malignancy of different organs. Prostatitis has been suggested as a cause of cancer and BPH. Till now, more than 100 types of human Papilloma virus (HPV) are recognized including low and high-risk groups for carcinogenesis. Among them HPV-16 and HPV-18 have shown further association with cancer. Regarding the presence of E6 and E7 in HPV and ability for modification of basal epithelial cells, related role in prostate cancer (as well as cervical and genital malignancies) is hypothesized. The aim of this study was to determine the association of HPV-16 and HPV-18 with prostate cancer and malignancy degree.

Methods: A total of 75 consecutive paraffin-embedded blocks including 50 samples with primary prostate cancer and 25 samples with benign prostate hyperplasia (BPH) as control were studied. Amplisense kit was used for replication at real-time polymerase chain reaction (PCR) to determine genotypes of HPV-16 and HPV-18. DNA purity was assessed by Nano Drop.

Results: The results of real-time PCR demonstrated that none of the samples of BPH and prostate cancer had amplification of HPV DNA.

Conclusion: The results revealed that HPV-16 and HPV-18 are not causes of prostate cancer.

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Introduction

Prostate carcinoma is the fifth most common malignancy and the second most common cancer among men worldwide (1). In Iran, it is the second most common cancer among men after gastric cancer (2). Age is an important risk factor for

prostate carcinoma. However in 25% of cases, it occurs in subjects under 65 years of age (3). Other contributing factors of prostate cancer include genetic factors such as Hereditary prostate cancer 1(HPC1) and Predisposing for cancer of prostate 1(PCAP), fat-enriched regimen, hormones especially

Review

Cesarean or Cesarean Epidemic?

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Abstract

Due to advances in surgical procedure, anesthesia techniques, blood transfusion and antibiotic therapy, the technique of cesarean section has been progressing over the time. However, cesarean section is still a risk-specific operation, with long-term and short-term consequences for the mother and neonate. The rate of cesarean surgery is constantly growing due to both justifiable and non-justifiable medical and non-medical reasons. There is evidence indicating that efforts are made in many countries to reduce the rate of cesarean delivery. In this review article, we try to assess the frequency of cesarean section in different countries, especially Iran. We searched several keywords, including cesarean section prevalence, cesarean section rate, world, delivery, Iran and health policies within the newest articles published in Google Scholar, PubMed, and ISI/Web of Sciences, as well as Iranian databases (Magiran, SID), from January 2017 to April 2019. The results show that there is still a high prevalence of C-section. In Iran, the highest rate of cesarean was in Tehran province (62.1%-72.1%) and the lowest was in Sistan and Baluchestan province (12%). It appears necessary to plan for effective interventions in terms of painless vaginal delivery, improving the quality of vaginal delivery services, proper culture and education.

Keywords: Cesarean section, Delivery, Health policies, Iran

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Introduction

The cesarean section is well described as the oldest abdominal surgery as well as one of the most common types of surgeries that are performed in pregnant women. This surgery is conducted for withdrawal of the neonate and placenta through cutting the abdominal wall (laparotomy) and the uterus incision (hysterotomy), and then suturing the uterus and the layers of the abdominal wall.¹ Cesarean is a surgical procedure to save the mother and/or neonate's life through terminating a complicated pregnancy in which vaginal delivery jeopardizes their health. It has also been reported that cesarean section prevents approximately 187 000 maternal and 2.9 million neonatal deaths annually.² However, unreasonable cesarean section raises the delivery-related risks for mothers and neonates.³ Thus, although cesarean was initially introduced as a method for saving mother and neonate's life, we are facing today what is described as an "epidemic of cesarean section".

The cesarean was a fatal operation for mothers, which was performed only for saving either the neonate's life

or mothers who were dying during delivery up to 18th century. For a long time, it was believed that "cesarean" was related to the birth of the Roman Emperor Julius Caesar (44-100 BCE). Currently, this theory is unacceptable, because the Caesar's mother lived for many years after the delivery. Given the deadlines of this surgical operation at that time, it does not appear possible. On the other hand, based on the mythical story Rostam's birth to his mother "Roudabeh", which is well described in Ferdowsi's *Shahnameh* (the famous Iranian epic), it appears that the operation defined as "*Rostamineh/Rostamin*" (equal to the method we know as cesarean) has a very long history of several thousand years in Iran (before the birth of Julius Caesar).

During the first half of the 19th century, maternal mortality rate due to cesarean section was 60%-100%. However, at the beginning of the 20th century, cesarean section was responsible for 25% and 24% of maternal and neonatal mortality, respectively. Mortality was often due to sepsis and severe bleeding.⁴ Although during the first half

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Epidemiology of Vehicle Fire Fatalities of Road Traffic Injuries in Kerman Province, Iran: A Cross-Sectional Study

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Abstract

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Keywords: Vehicle fire fatalities (VFFs); Road traffic injuries (RTIs); Fatality; Iran

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BACKGROUND: Vehicle fires are one of the most important causes of fatalities in road traffic injuries (RTIs), but there are no accurate statistics about vehicle fire fatalities (VFFs) due to RTIs in Iran.

AIM: This study aimed to investigate the Epidemiology of vehicle fire fatalities (VFFs) due to road traffic injuries (RTIs) in Iran.

METHODS: In this cross-sectional study, a researcher-made checklist was used to collect the required data from the files of RTI fatalities in the Kerman Legal Medicine Organization (KLMO), or coroner's office. All reported victims of vehicle fires in the ten years from 2007 to 2017 were included in the study. The data were analysed using SPSS ver. 18, with $p = 0.05$ considered as the level of significance.

RESULTS: The authors found 124 cases of vehicle fire fatalities in Kerman, with a mean age of 30.45 ± 12.41 , of which 50% were in the 25-49 years age group. Most frequently, the victims were Iranian (91.9%), married (66.1%), self-employed (51.6%), and urban dwellers (79.8%), and had died because of burns (91.9%). In 46.8% of cases, the victims were the driver, and in the remaining 53.2%, they were the passenger of the crashed vehicle. Most frequently, vehicle fires occurred on extra-urban roads (90.3%), during spring (35.5 %) or summer (32.3%), due to a vehicle-to-vehicle collision (66.9%), between sedans (69.9%), and at night (63.7%). Most victims died at the scene of the incident (87.9%) and had been transferred to hospital by an ambulance (71%).

CONCLUSION: This study indicated that car fires caused the death of young and middle-aged people. The authors suggest the implementation of preventative measures promoting car safety; establishing speed management; establishing laws governing driving, manufacturing and importation of vehicles; construction of safe roads; identifying accident-prone points; installing road warning signs; establishing more roadside stations; ensuring stricter police monitoring; and improving vehicle safety standards and public awareness about the risks of speeding.

Introduction

Road traffic injuries (RTIs) are the main causes of early death, disability and a major health issue in low and middle-income countries[1]. RTIs are the cause of deaths, financial losses, and preventable health threats, even in developed countries [2]. It has been reported that most victims of RTIs are people aged <50 years old[3]. RTIs are the second leading cause of death from fatal injuries in Iran [2]. According to the World Health Organization (WHO), Iran had an

RTI mortality rate of 34.1 deaths per 100,000 in 2013 [4] and had the third-highest rate of fatal RTIs in 2015 [5].

Vehicle fire, as a notable cause of RTI-related fatality, has received increasing attention since the 1960s [6]. According to the National Fire Protection Association's (NFPA) 2010 report, in the United States, 31 vehicle fires happen every hour, and one person dies because of vehicle fire every day. Between 2003 and 2007, about 287,000 vehicle fires caused 1,525 injuries and 480 fatalities in the US. During this period, on average, 8,200 highway vehicle

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Effect of Different Anesthetic Techniques on Cytokine Gene Expression in Patients who Underwent Elective Cesarean Section

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ABSTRACT

Cesarean section (CS) is an important challenge for a pregnant woman and her newborn. The most common anesthesia techniques used for CS are general anesthesia (GA) and spinal anesthesia (SA). This study was designed to compare the modulation of genes whose expression level is indicative of the immune system following exposure to GA and SA.

The present study was performed on 40 women who were scheduled for elective CS receiving GA or SA. The expression levels of the relative mRNA of Interleukin (IL)-4, IL-6, IL-10, IL-17, Interferon (IFN)- γ , and tumor growth factor (TGF)- β before anesthesia (T0) and 24 hours post-anesthesia (T1) were analyzed by real-time polymerase chain reaction (RT-PCR) technique.

Twenty-four hours post-anesthesia, the expression levels of IL-10, IL-17, and IFN- γ genes were decreased while the expressions of IL-4, IL-6, and TGF- β genes were upregulated in two groups, however, the differences were not significant. The mRNA level of IL-4 was increased in the SA group significantly.

The post-CS mRNA levels of IL-4 in the SA group may indicate that SA is more appropriate than GA for the initiation of tissue repair pathways.

Keywords: Cytokines; Gene expression; General anesthesia; Spinal anesthesia

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INTRODUCTION

Cesarean section (CS) is one of the most common and the oldest surgeries that is performed on women.¹

Research Paper: Effectiveness of Happiness Training on the Pattern of Parent-Child Relationships and the Hope of Parents With Autistic Children



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ABSTRACT

Objectives: Families of children with special needs face many problems. This study aimed to investigate happiness training on the pattern of parent-child relationships and the hope of parents with autistic children.

Methods: Twenty-six couples with autistic children who referred to Rafsanjan Autism Clinic, Rafsanjan City, Iran, were enrolled in the study by the census method. Informed consent was obtained from them. Then the parents completed the Schaefer and Edgerton Parent-Child Interaction Questionnaire (1985) and Miller Hope Scale (1988). Next, parents were randomly assigned to the intervention or control groups. Happiness training based on the Fordyce method was performed for eight 1.5-hour sessions per week for the intervention group. The parents of either group completed the questionnaires after training of the intervention group (about 2 months and 3 months later). The Chi-square test, independent t-test, and 2-way repeated-measures ANOVA were used for statistical analysis. The level of significance was set at 0.05.

Results: The results of the analysis showed that the changes in the scores of communication ($P=0.013$), acceptance ($P=0.008$), control ($P=0.005$), independence ($P=0.040$), aggressive non-attachment ($P=0.015$), and hope ($P=0.010$) were significant between the two groups at stages of measurement. The scores of all variables increased but the aggressive non-attachment decreased.

Discussion: The education of happiness in Fordyce style influenced the interactive pattern of communication and hope of parents with autistic children. Therefore, training of happiness along with other services available to parents of autistic children can also be considered.

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General Anesthetics on Immune System Cytokines: A Narrative Review Article

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Abstract

Context: According to the previous studies, general anesthesia influences the immune system. Evaluating such impacts on the immune system helps to improve the management of anesthesia.

Evidence Acquisition: The current review aimed to summarize the literature related to the effects of general anesthesia agents on the cytokines. Google Scholar, PubMed, and ISI/Web of Sciences databases were searched using the following keywords: cytokine, general anesthesia, immune response, intravenous anesthetics, volatile anesthetics, opioids, benzodiazepines, and controlled ventilation.

Results: Long-term administration of general anesthesia drugs, due to their effects on cytokines, can lead to disease progression in patients with immune deficiency. Due to the conflicting results of various studies and the increasing number of patients with immune deficiency, the choice of the appropriate general anesthesia agents facilitates achieving the more favorable function of the cytokines.

Conclusions: It seems that the effect of general anesthesia on the immune system in healthy patients and short-term surgeries is not considerable and changes in the immune system are related to surgical trauma, particularly in major surgery.

Keywords: Inherent Immune System, Acquired Immune System, Cytokine, General Anesthesia

1. Context

The immune system has evolved to protect the body through developing appropriate immune responses against potentially harmful pathogens and non-compliant antigens. The immune system uses several mechanisms to regulate these responses which may lead to tumor growth, rejection of organ transplantation, autoimmune diseases, asthma, and allergies. The prevalence of diseases related to immune regulation has increased significantly in recent decades (1, 2).

The immune response is the response to microbial components and macromolecules such as proteins, polysaccharides, and small chemicals that are identified as foreigners, regardless of their physiological and pathological consequences. The body's defense system against germs contains two parts, the innate immunity

(which comes into play immediately after identifying the pathogen) and the acquired immune responses. Innate immunity response includes cellular and biochemical defense mechanisms, such as epithelium and antimicrobial substances released by it, neutrophils, macrophages, natural killer (NK) cells, blood proteins, and other inflammatory mediators that exist even before the infection (3). The acquired immune response usually occurs two to three days after exposure to antigens and its severity increases after each recurrence. Lymphocytes and their secreted products are the main components of the acquired immunity. T cells play a vital role in humoral and cellular responses through direct contact and cytokines release (4-6). Cytokines are key modulators of inflammation that play both inflammatory and anti-inflammatory roles. Cytokines contribute to the removal of antigens and play a key role in the drugs and systemic inflammatory

Research Article

Chronic Patients' Activation and Its Association with Stress, Anxiety, Depression, and Quality of Life: A Survey in Southeast Iran

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A better perception of the factors associated with patient activation, as a way to improve self-management, is the most important step in planning patient-centered education for chronic disease management. Therefore, the present study is aimed at investigating the relationship between activation, stress, anxiety, depression, and quality of life (QOL) in patients with chronic diseases. This correlational study was performed on 293 chronic patients admitted to coronary care units (CCUs) in one of the hospitals in Rafsanjan. The Patient Activation Measure (PAM), Quality of Life-BREF (WHOQOL-BREF), and Depression, Anxiety, and Stress Scale-21 Items (DASS-21) were used to collect data. The data were then analyzed using SPSS 22. A significant positive correlation was observed between general QOL and PAM ($P < 0.001$). In addition, a significant negative correlation was found between PAM, stress ($P = 0.032$), and depression ($P = 0.025$). The results of multivariate linear regression indicated that only physical and psychological subscales of QOL significantly predicted PAM ($B = 0.24$; 95% confidence interval; P value < 0.05). Owing to the fact that some subscales of QOL have a determinant role in the PAM of chronic patients, healthcare providers are recommended to plan and implement the necessary interventions to improve the QOL and the health outcomes of chronic patients.

1. Introduction

The silent pandemic of chronic diseases, one of the biggest public health challenges worldwide, is gradually spreading to all countries [1]. Chronic diseases have a high mortality rate and impose a heavy burden on healthcare systems [2]. According to the Institute of Health Metrics and Evaluation (IHME), chronic diseases accounted for 72% of the causes of death in 2016 [1]. According to the World

Health Organization (WHO), chronic diseases caused 73 percent of deaths and 60% of the global burden of disease in 2020. In addition, 79% of these deaths will occur in developing countries [3]. The most common chronic diseases, including cardiovascular disease, cancer, chronic obstructive pulmonary disease (COPD), and type 2 diabetes have common and preventable risk factors such as hypertension, weight gain, and high-risk behaviors such as poor nutrition, sedentary lifestyle, and smoking [4].



Sexual satisfaction and marital intimacy in Iranian male pornography users

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ABSTRACT

In married men, the use of pornography is a concern associated with harms to marital life. Little is known regarding effect of pornography use on sexual satisfaction and marital intimacy. This study compared sexual satisfaction and marital intimacy between two groups of married men with and without a history of using pornography in Rafsanjan City (Kerman Province, Iran). This retrospective cohort study was performed on 267 married men in Rafsanjan City and selected by convenience sampling method in 2020. Data collection tools included demographic characteristics form, unidimensional relationship closeness scale (URCS), Hudson sexual satisfaction questionnaire, and sexual pornography questionnaire. Data were analyzed by Chi-Square, Two-Sample Independent t-test, and multivariate analysis of covariance (MANCOVA) using SPSS software version 21. The mean age of participants was 35.97 and 63.3% had college education. Results showed that sexual satisfaction and marital intimacy were lower in male pornography users than non-users, but this difference was not statistically significant after removing the effect of demographic variables. Our findings revealed that in men, the use of pornography does not seem to reduce sexual satisfaction and marital intimacy.

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Lay summary

Pornography using is a concern associated with harms to marital life. In this study we compared sexual satisfaction and marital intimacy between two groups of 267 married men with and without history of using pornography in Rafsanjan City (Kerman Province, Iran). Findings revealed that in men, using pornography does not seem to reduce sexual satisfaction and marital intimacy.

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Short-Communication

The effect of royal jelly and silver nanoparticles on liver and kidney inflammation

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Abstract

Objective: Royal jelly (RJ) is a honey bee product for which, anti-inflammatory properties were shown *in vitro*. Nanoparticles, including nano-silver (NS), are plausible inflammation inducers that act by activation of immune cells and consequent production of pro-inflammatory cytokines. This project aimed to explore immunomodulatory effects of royal jelly and nano-silver on the kidney and liver.

Materials and Methods: In this project, 40 male rats were grouped as follows: 10 rats as controls, 10 rats treated with RJ; 10 rats treated with both NS and RJ and 10 rats treated with NS. Liver and kidney interleukin (IL)-1 β , -2, -6, and -33 levels were determined using commercial ELISA kits.

Results: RJ reduced kidney IL-6 levels in comparison to control and NS--RJ groups. RJ and NS reduced kidney and liver IL-1 β levels. Kidney IL-33 levels were decreased in the RJ and nano-silver groups in comparison to the NS--RJ group.

Conclusion: Based on this study, it may be concluded that RJ together with NS can play anti-inflammatory roles and may affect the function of immune cells.

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Introduction

Royal jelly (RJ), as a viscous macromolecule, is produced by worker bees

(*Apis mellifera*), and is an essential food for queen of bees (Kamakura, 2011). Nowadays, RJ is widely used in production of several materials, such as dietary



Can Nurses' Informatics Competency Predict Their Professional Competency?

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Abstract

Background: Understanding the way nurses' informatics competencies affect their mastery of professional competencies can help with providing high quality care and design contents for continuing nursing education. This study aimed to determine the association between nurses' informatics and their clinical competencies.

Materials & Methods: A total of 150 nurses who met the inclusion criteria were enrolled in this descriptive study from three general public hospitals in Rafsanjan, Iran, using stratified random sampling method. Self-reporting data collection was performed applying three questionnaires of (1) personal and job characteristics, (2) the Self-Assessment of Nursing Informatics Competencies Scale (SANIC), and (3) the Competency Inventory for Registered Nurses (CIRN). Data were analyzed using SPSS 22.0 and Kolmogorov-Smirnov, Chi-square, Pearson's correlation coefficient, and linear regression statistical tests.

Results: Female nurses had higher CIRN scores than male ones ($p = 0.027$). The results of the Pearson's correlation coefficient showed a moderate significant positive association between SANIC and CIRN scores ($r = 0.341$, $p = 0.001$). Furthermore, results of the linear regression analysis showed that about 11% of the CIRN score was associated to the SANIC score ($P = 0.001$). After adjustment based on gender ($p = 0.060$) and education ($p = 0.064$), the correlation was not significant.

Conclusion: Given the effect of gender and level of education, there was no significant association between Nursing Informatics Competencies and nurses' competency. The level of application of informatics in nursing should be reviewed contextually.

Keywords: Nursing, Informatics, Clinical Competency, Professional

Introduction

Information and communications technology (ICT), as a support system for healthcare professionals and plans, has dramatically affected all aspects of health [1]. Accordingly, healthcare systems are

shifting to a new model called "digital health" [2]. Emergence and growth of digital health have revolutionized medical practice by introducing innovative treatment forms and rapidly exchanging patient data. In fact, digital health has brought tremendous benefits to all professionals providing



Depression and Self-Efficacy Among Iranian Children During the Prevalence of COVID-19 Disease

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The coronavirus disease 2019 (COVID-19) outbreak has quickly endangered the physical and mental health of people in the community, particularly vulnerable people such as children. This study was carried out to investigate the depression and self-efficacy of Iranian children during the COVID-19 outbreak. This cross-sectional research was conducted on 321 students aged 8 to 17 in southeast Iran. A social media-based online questionnaire was used to collect data. The information was gathered using demographic and COVID-related items, the Children's Depression Inventory (CDI), and the Self-Efficacy Questionnaire for Children (SEQ-C). No significant correlation was observed between depression and self-efficacy of children ($P = 0.23$). However, in subscale of CDI, negative mood, ineffectiveness and negative self-esteem had a significant correlation with self-efficacy (<0.001). Depression had a significant correlation with family income ($p = 0.017$), being at risk of coronavirus infection ($p = 0.036$), effectiveness of preventive measures ($p = 0.015$) and how information about the coronavirus disease was obtained ($p = 0.018$). According to the results, the mean score of depression was higher than the midpoint of the questionnaire in Iranian children, therefore, it is needed to take the necessary measures and treatment plans to reduce the rate of depression in children. Further research is needed to assess and prevent childhood depression.

Keywords: COVID-19, coronavirus, depression, self-efficacy, children

INTRODUCTION

Coronavirus is a type of virus that can cause respiratory infections. The virus can cause mild illnesses like colds or more severe illnesses like the severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS). The virus is now known as COVID-19 (1). The World Health Organization (WHO) has classified the disease as a major threat to physical and mental health because the outbreak of COVID-19 disease has altered families' daily and normal

Effectiveness of cognitive-behavioral therapy on perceived stress among patients undergoing percutaneous coronary intervention: A randomized controlled trial

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Abstract

Purpose: This study aimed to determine the effectiveness of cognitive-behavioral therapy on perceived stress of patients undergoing percutaneous coronary intervention (PCI).

Design and Methods: This was a randomized clinical trial in which the patients under coronary intervention were allocated to two groups, intervention and control by using block randomization. The experiment group received eight sessions of cognitive-behavioral therapy. The patients' perceived stress was measured before, immediately, and 1-month post intervention.

Findings: The results showed the perceived stress scores changed significantly in the intervention group compared with the control group immediately and 1 month after the intervention. Therefore, the perceived stress level significantly reduced in the patients of the intervention group ($p < 0.001$).

Practice Implications: Cognitive-behavioral therapy significantly reduced perceived stress in patients undergoing PCI.

KEYWORDS

cognitive-behavioral therapy, perceived stress, percutaneous coronary intervention

1 | INTRODUCTION

Nowadays, cardiovascular diseases, especially coronary artery disease, are the major cause of mortality worldwide (Kashef et al., 2020). Percutaneous coronary intervention (PCI) is one of the most important and advanced achievements of the medical science for timely diagnosis and treatment of coronary artery disease (Meshgin Abadi et al., 2013).

Today, PCI, a new, low-risk, low-price, and less invasive procedure, has replaced coronary artery bypass graft surgery (Darvishpour et al., 2016). More than 650,000 people in the United States are treated by this method annually (Kashef et al., 2020). A number of studies have reported that although invasive interventions such as PCI have many benefits, patients undergoing these procedures are under a lot of stress, and they may gradually experience complications such as passive

feelings, rejection, unreliability, despair, anxiety, depression, sleep disorders, and lack of control over physical health (Allahbakhshian et al., 2014; Park et al., 2015).

Perceived stress is either the body response to changes that require adaptation or physical, mental, and emotional responses (Gbessemehlan et al., 2020). This concept was derived from Folkman and Lazarus' theory of the role of evaluation in the stress process, which is created by the interpretation of a stressful event. This interpretation suggests either a threatening or a safe situation (Radmehr & Yousefvand, 2017). Crises such as heart diseases reduce mental balance and impair the coordination of body and mind, but they cause much more stress than many other diseases (Liu et al., 2017). The researchers reported that more than half of patients undergoing coronary intervention were under stress and anxiety (Mikosch et al., 2010). Early discharge of patients under PCI causes that healthcare providers spend less time on patients' psychological needs and adaptations to current situation. Therefore, patients experience a lot of stress and many psychological complications because their health needs have not been met (Kilonzo & O'Connell, 2011). It is important to pay attention to the psychological problems of the patients undergoing coronary interventions because they are under stress and anxiety (Ramesh et al., 2017). Both cardiac event, which leads to physical symptoms and complications, and emergency intervention performed immediately on most patients with myocardial infarction put a lot of stress on them because they are not aware of the procedure and are not psychologically ready for the treatment (Moradipناه et al., 2009). A review of the literature shows that the effectiveness of various interventions such as continuous care model (Zakeri et al., 2020), psychological intervention program (Shen et al., 2018), and cognitive-behavioral therapy (CBT) (Dekker et al., 2012) in cardiac patients has been evaluated. Therefore, CBT is one of the nonpharmacological treatments that can be helpful in reducing stress of these patients.

CBT is an eight-session group-based program which integrates meditation practices from Kabat-Zinn (O'Doherty et al., 2015). CBT aims to change the feelings and behaviors (Ruffault et al., 2016). The therapist is responsible for developing collaboration, establishing therapeutic communication and training the patients (O'Doherty et al., 2016). Therefore, the patients can play role in their treatment, identify and analyze intrusive thoughts and change their behaviors gradually (Alsubaie et al., 2020). There has been additional research on Internet-delivered cognitive behavior therapy (ICBT) for chronic health conditions (Mehta et al., 2019; Wijenberg et al., 2016). A number of studies showed that cognitive-behavioral stress management training were effective in reducing stress in the women with chronic hypertension (Balazadeh et al., 2019), patients with heart failure (Dekker et al., 2012), and patients with chronic diseases (Bernard et al., 2018).

Some studies have shown that there is a widespread stress response in patients undergoing coronary intervention, predominantly anxiety and stress. Du et al. showed that most patients undergoing PCI were under a lot of stress due to the cardiac event on the one hand and invasive intervention on the other hand (Du et al., 2016). On the other concerning the increasing prevalence of

coronary artery disease, a large number of patients require PCI daily (Kashef et al., 2020). More research is also needed to identify interventions that are effective in reducing stress.

To date, no previous studies have focused on to measure the effect of CBT on patients undergoing PCI. Because more research is needed to identify interventions that are effective in reducing stress. Therefore, this study aimed to determine the effect of CBT on perceived stress of the patients undergoing PCI.

2 | METHODS

2.1 | Study design and setting

This was a randomized clinical trial. The research environments were the Cardiac Rehabilitation Center of Shafa Hospital in Kerman, southeast of Iran in 2020. This hospital has the highest rate of patient admission to cardiac care units with various diagnoses. The cardiac Rehabilitation Center is an outpatient unit and provides services to all heart patients, including internal heart patients, heart surgeons, patients with pacemakers, and patients with renal failure. Providing outpatient services to heart patients by performing sports activities under the supervision of a specialist physician with heart rhythm control, especially after heart surgery to return to presurgery activities and also increase the contractile strength of the heart. This study started in October 2019 and ended in March 2020.

2.2 | Sample size and sampling

The samples were selected using convenience sampling method, and they were allocated into two groups by block randomization method. Labels A or B (A = intervention and B = control) were assigned to the groups, and the block size was 4. The randomization list was generated by using free online software (<https://www.sealedenvelope.com/simple-randomiser/v1/lists>). The second author generated the randomization list and the first author enrolled the participants and assigned them to the groups. Inclusion criteria were patients with the ability to speak Persian, aged ≥ 18 years, with no Alzheimer, no brain stroke and no visual and auditory processing disorder. Exclusion criteria were absence in more than one session of CBT sessions, the presence of stressful life events (such as divorce or death of a loved one) during the research.

As demonstrated in a previous study, the present study ($n = 15$) had sufficient power (90%) and the 95% confidence level to detect a mean difference of perceived stress of 3.1 (Perceived stress: $\mu_1 = 37.95$, $\mu_2 = 38.85$, $S_1 = 8.28$, and $S_2 = 9.82$). In addition, power analysis calculations with G*Power software (version 3.1.9.2) for repeated measures analysis of variance (ANOVA) test indicated that (power = 90%, $p = 0.05$, number of groups = 2, and number of measurements = 3) 50 participants would be needed to detect an effect size of 0.39. Finally, 53 participants were assigned to the intervention and control groups of whom 50 finished the study (Figure 1).

2.3 | Measures

Demographic information form and perceived stress scale were used for data collection.

2.3.1 | Demographic information form

Demographic and background information included age, sex, marital status, type of disease, level of education, living place, underlying diseases, addiction, occupation, medication regimen, sleep disorders, history of neurological disorders and the use of psychiatric drugs and sedatives.

2.3.2 | Perceived stress scale

We used a questionnaire to assess patients' perceived stress which is previously designed by Cohen et al (1994). This questionnaire included 14 items and scoring was done using a Likert 5-point scale

(never = 0, almost never = 1, sometimes = 2, often = 3, and most often = 4). Phrases 4, 5, 6, 7, 9, 10, and 13 are scored reversely (never = 4 and most often = 0). Therefore, a total perceived stress score ranging from 0 to 56, and a higher score indicates more perceived stress. Cohen et al. (1994) obtained the internal consistency coefficients for each of the subscales and the overall score was between 0.84 and 0.86 (Cohen et al., 1994). In Iran, Asghari et al. calculated the reliability of the questionnaire by Cronbach's alpha (0.84) and its validity by factor, construct and content analyses (0.89) (Asghari et al., 2013).

2.4 | Data collection and intervention

To collect data and conduct the study, the researcher first referred to the research setting and obtained the necessary permission from the management of hospital and cardiac rehabilitation center. After the patients went to the clinic after discharge from the hospital, the researcher first conducted an individual interview with the patient and examined the inclusion and exclusion criteria in the patients.

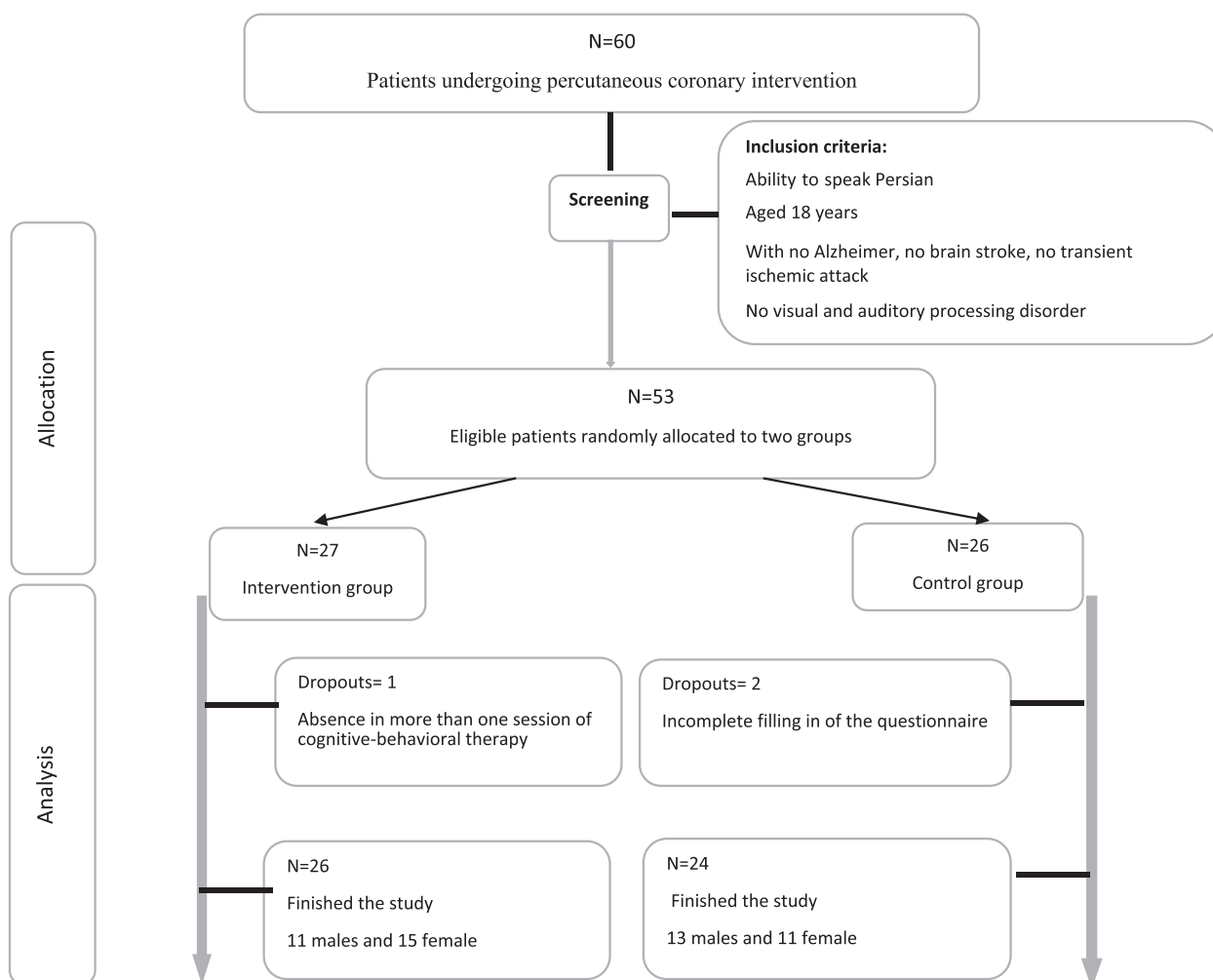


FIGURE 1 Explanation of sample size and sampling

After selecting eligible patients, they were divided into two groups of intervention and control based on the block randomization method. Then, patients completed the demographic information questionnaire and perceived stress scale. Patients in the control group received only routine care during the study. Due to the fact that patients were discharged after surgery and hospitalization, they did not have access to each other and no visits were made to each other. Also, the time of patients in the intervention group was adjusted so that they did not come into contact with the control group. In addition to routine care, the intervention group experienced CBT for 4 weeks, two sessions a week. The patients were divided into groups of 5–6 people and the intervention was performed by a trained researcher (who had obtained training confirmation from a clinical psychologist before the intervention.) under the supervision of a clinical psychologist in a quiet environment in the rehabilitation clinic. The order of CBT sessions was as follows:

Session 1: pretest, familiarity of the group members with each other, brief explanations about coronary artery disease and its treatments, especially PCI, stress management and its effect on coronary artery disease, training of Benson techniques. **Session 2:** review of the homework of previous sessions, awareness of the physical and psychological effects of stress and the importance of managing and monitoring stress levels, the effect of stress on the pattern of thinking, emotions and behaviors, explanation of the interrelated thoughts, assessment of insomnia, perception of sleep and insomnia, relaxation exercise (guided imagination), homework assignment. **Session 3:** reviewing the homework of previous sessions, introducing common types of negative thoughts and cognitive distortions and how to identify and challenge them, training sleep hygiene, practicing relaxation (progressive muscle relaxation: eight muscles), assigning homework. **Session 4:** reviewing the homework of previous sessions, learning mindfulness, relaxation techniques and new timing, restricting sleep, preventing daily naps, food hygiene, training progressive muscle relaxation: 16 muscles, assigning homework. **Session 5:** reviewing homework from previous sessions, replacing irrational thoughts by logical thoughts, learning positive thinking, training mind blocking, mental imagery, guided imagination, assigning homework. **Session 6:** learning anger management, practicing a mantra in meditation, learning a variety of effective coping styles, relaxation and not trying to fall asleep (opposite intention), assigning homework. **Session 7:** reviewing the homework of the previous sessions, problem-solving skills, summarizing thoughts, sleep reality, presenting the cycle of thought, feeling and behavior and applying all the instructions of the previous sessions and assignments and presenting the whole CBT plan, sleep hygiene, cognitive-behavioral interventions, reminding treatment progress according to the client's sleep calendar. **Session 8:** summarizing the materials presented in the seven sessions, introducing some books to become more familiar with the methods of stress management and use of attention techniques, taking patients' feedbacks and completing posttest questionnaire. It should be noted that the patients' medical records were studied to obtain information about samples, the last day of their admission and discharged patients and their contact

numbers were taken to perform the intervention and complete the questionnaires. The sessions were held on Saturdays and Mondays of each week, and the samples were contacted and reminded of the exact time the day before each session. A video projector was used to display instructional videos and participants' questions were answered. Again, perceived stress information was collected from both groups immediately and 1 month after the intervention (for follow-up).

2.5 | Ethics consideration

Ethics Committee of Kerman University of Medical Sciences approved the study (Ethics code No. IR. KMU. REC.1398.17) and Iranian Registry of Clinical Trials was: IRCT20190725044329N1. Written informed consent was obtained from all samples. Before the intervention, the purpose and importance of the research were explained to the participants, and while receiving written consent, they were explained that participation in the research was voluntary and their information would be confidential. For ethical considerations to be observed, the materials were printed and presented to the control group at the end of the study.

2.6 | Data analysis

Data analysis was performed using SPSS 25. Descriptive statistic (frequency, percentage, mean, and standard deviation) was used to describe the demographic and background characteristics of the participants. Independent *t*-test and Chi-square test were used at the beginning of the study to determine the similarity of the two groups in terms of background and confounding variables. Owing to the fact that the perceived stress score in the two groups had a normal distribution and the variances were equal between the two groups, repeated measures ANOVA and Bonferroni post hoc test were used within and between groups at different times. A significance level of 0.05 was considered.

3 | RESULTS

The mean ages of the samples in the intervention and control groups were 51.81 ± 4.61 years and 50.83 ± 7.70 years, respectively. No significant difference was found between the two groups in age ($p = 0.74$, $t = -0.46$). 57.7% of the samples in the intervention group and 45.8% of the samples in the control group were female. No significant difference was observed between the two groups in marital status, level of education, occupation and living place ($p > 0.05$) (Table 1).

In addition, no significant difference was found between the two groups of intervention and control in the type of disease, duration of PCI, length of stay after PCI, history of addiction, and the history of sleep disorders. Furthermore, none of the samples in the two groups

TABLE 1 Demographic information in the two groups of intervention and control

Group variable		Intervention		Control		Chi-square test	p-value
		N	%	N	%		
Sex	Male	11	42.3	13	54.2	0.70	0.40
	Female	15	57.7	11	45.8		
Marital status	Married	24	92.3	21	87.5	0.32	0.57
	Widow/Divorced	2	7.7	3	12.5		
Education	Illiterate	1	3.8	2	8.3	2.99	0.39
	High school	10	38.5	6	25.0		
	Diploma	9	34.6	13	54.2		
	College education	6	23.1	3	12.5		
Job	Unemployed/housewife	11	42.3	8	33.3	0.79	0.85
	Governmental	9	34.6	8	33.3		
	Freelance	5	19.2	7	29.2		
	Retired	1	3.8	1	4.2		

Note: Data were presented numerically (%).

TABLE 2 Clinical information in the two groups of intervention and control

Group variable		Intervention		Control		T-test	p-value
		M	SD	M	SD		
Duration of illness		2.20	0.40	2.12	0.34	0.64	0.53
PCI duration (months)		2.23	0.91	2.21	0.72	0.10	0.92
Duration of hospitalization after PCI (months)		1.85	0.54	2.08	0.28	-1.91	0.06
		N	%	N	%	Chi-square	p-value
History of addiction	Yes	6	23.1	9	37.5	1.24	0.27
	No	20	76.9	15	62.5		
History of sleep disorders	Yes	16	61.5	16	66.7	0.14	0.071
	No	10	38.5	8	33.3		

Abbreviations: M, mean; PCI, percutaneous coronary intervention; SD, standard deviation.

had a history of taking sleeping pills. Therefore, the two groups were identical in terms of these variables (Table 2).

The results of the analysis of variance in repeated measures showed that the interaction of group and time was significant. Also, group and time variables are significantly responsible for changes in the average perceived stress score ($p < 0.001$). The mean perceived stress in the intervention group was 34.42 ± 2.53 , 22.35 ± 3.89 , and 21.38 ± 3.57 before the intervention, immediately after the intervention, and 1 month after the intervention, respectively. Perceived stress of the intervention group significantly reduced after the intervention ($p < 0.001$). However, the mean perceived stress in the control group increased from 34.12 ± 2.40 before the intervention to 34.70 ± 2.33 immediately after the intervention and 35.21 ± 2.69 1 month after the intervention. The results showed a significant difference between the two groups in the mean score of perceived stress (Table 3).

The results of Bonferroni post hoc test also showed no significant difference between the two groups in the mean perceived stress before the intervention, but the mean perceived stress in the intervention group reduced immediately and 1 month after the intervention ($p < 0.001$) (Table 4). The results of Bonferroni post hoc test also showed that in the intervention group, the mean perceived stress score 1 month after the intervention was significantly lower than immediately after the intervention ($p = 0.03$) and before the intervention ($p < 0.001$). Also, the perceived stress immediately after the intervention was significantly reduced compared to before the intervention ($p < 0.001$). In other words, despite the end of the intervention, the effect lasted until 1 month after the intervention. In the control group, the mean of perceived stress was increased 1 month after the intervention compared to immediately after the intervention ($p = 0.53$) and before the intervention ($p = 0.39$). Perceived stress was also increased immediately after the intervention

TABLE 3 Comparison of the mean of perceived stress at different times in the two groups of intervention and control

Group variable	Intervention		Control		Average changes	p-value
	M	SD	M	SD		
Before intervention	34.42	2.53	34.12	2.40	0.30	0.67
Immediately after the intervention	22.35	3.89	34.70	2.33	-12.36	<0.001*
One month after the intervention	21.38	3.57	35.21	2.69	-13.82	<0.001
Source of change	Sum of squares	Degrees of freedom	F		p-value	Eta2
Group	2787.95	1	161.73		<0.001*	0.77
Time	1145.0	1.38	121.46		<0.001*	0.72
Group-time interaction	1505.27	1.38	159.68		<0.001*	0.77
Error	827.45	48				

Abbreviations: M, mean; SD, standard deviation.

* $p < 0.05$.**TABLE 4** Bonferroni post hoc test for comparison of changes in mean perceived stress at different times between intervention and control groups

Time	Group (I)	Group (J)	Average changes (I-J)	Standard error	P-value
Immediately after the intervention	Intervention	Control	0.30	0.70	0.67
Immediately after the intervention	Intervention	Control	-12.36	0.92	<0.001*
One month after the intervention	Intervention	Control	-13.82	0.90	<0.001*

* $p < 0.05$.**TABLE 5** Bonferroni post hoc test for comparing changes in mean stress at different times within each group

Group	Time (I)	Time (J)	Average changes (I-J)	Standard error	p-value
Intervention	One month after the intervention	Immediately after the intervention	-0.96	0.35	0.03*
		Before intervention	-13.04	0.67	<0.001*
	Immediately after the intervention	Before intervention	-12.08	0.72	<0.001*
Control	One month after the intervention	Immediately after the intervention	0.50	0.36	0.53
		Before intervention	1.08	0.70	0.39
	Immediately after the intervention	Before intervention	0.58	0.74	<0.99

* $p < 0.05$.

compared to before the intervention ($p = 0.99$). Although the level of stress in the control group was increasing, but this amount was not statistically significant (Table 5).

4 | DISCUSSION

The results of the present study showed that the mean perceived stress in the intervention group significantly reduced immediately after the intervention while the mean perceived stress in the control group increased. In addition, a significant difference was observed between the two groups in the mean perceived stress immediately after the intervention, and these significant changes were still present 1 month after the intervention. Other studies have also shown that

cognitive-behavioral stress management training reduced perceived stress in women with hypertension (Adavi et al., 2017), nurses working in a psychiatric hospital in India (Sailaxmi & Lalitha, 2015), patients with heart failure (Dekker et al., 2012), and patients with chronic diseases (Bernard et al., 2018). The results of some studies also showed that CBT could have a positive and significant effect on perceived stress in women with type 2 diabetes (Razavizadeh Tabadkan et al., 2019), women with hypertension (Khosravi & Ghorbani, 2016) and women with systemic lupus erythematosus (Neyestani et al., 2011). No study was found to investigate the effect of CBT on perceived stress in patients.

The results of the present study showed a significant reduction in the perceived stress of the intervention group 1 month after the intervention, but the perceived stress of the control group increased.

A study showed a significant reduction in the perceived stress of nurses working in a psychiatric hospital 1 month after CBT (Sailaxmi & Lalitha, 2015). Another study also showed a significant difference between the intervention and control groups in the perceived stress scores of women with hypertension 1 month after CBT (Adavi et al., 2017). Some results in longer follow-up time, have shown a significant reduction in the perceived stress of patients with lupus erythematosus in the intervention group 2 months after CBT (Neyestani et al., 2011). However, some researchers reported no significant reduction between the intervention and control groups 3 months after mindfulness-based cognitive therapy (Razavizadeh Tabadkan et al., 2019). One of the reasons for the inconsistency may be the differences in the study population and the duration of follow-up.

According to the results of the present study and previous studies, CBT can be an effective intervention to reduce perceived stress in patients undergoing PCI. It is very important to control stress in acutely ill patients undergoing diagnostic and therapeutic procedures such as PCI because these diseases are stressful for patients due to their threatening and shocking nature. It is clear that individuals' perceived stress affects their reactions and adherences to treatment (Khosravi & Ghorbani, 2016). Therefore, it is necessary to reduce the stress of these people by using safe and secure methods. With increasing information about stress, muscle relaxation, identification of unhelpful thoughts, cognitive reconstruction, problem-solving training, selfassertiveness skills training, anger management, and planning for daily activities (Adavi et al., 2017), CBT can play an important role in stress reduction, adaptation and thus improvement of the quality of life (Nesami et al., 2014). Therefore, it is recommended to reduce patients' stress, increase their adaptation and improve their quality of life by continuing this method and conducting counseling sessions.

5 | STUDY LIMITATIONS

There were also some limitations. First, the results of the current study are limited to patients under PCI and cannot be generalized to patients with other interventions and acute situations. For future research, it is recommended to investigate the effectiveness of CBT on different mental health problems in patients with different acute diseases with levels of severity receiving CBT to determine the specificity of changes in mindfulness in acute situations. Second, samples in our study were mostly in southeastern Iran. Whether the present findings can be generalized to more diverse populations remains to be determined. Such interventions are also recommended in communities with different cultures and other acute illnesses. Third, the use of selfreporting tools is one of the limitations of this study. This study was performed during the COVID-19 epidemic. Although none of the patients had coronavirus disease, caution should be exercised in interpreting the results due to the prevalence of coronavirus disease and the possibility of affecting the results.

6 | CONCLUSION

This study shows that CBT could reduce perceived stress in patients undergoing PCI. Owing to the fact that CBT is effective in reducing the perceived stress of these patients and it is an inexpensive, ease to use and practical method, it is recommended that the necessary planning be done to train medical staff, especially nurses to develop their knowledge and skills regarding this intervention. Moreover, in future research, it would be recommended to investigate the effectiveness of CBT on different dimensions of life in patients with coronary artery diseases such as sleep quality and quality of life.

7 | IMPLICATIONS FOR NURSING PRACTICE

The results of this study showed that CBT could be important in reducing the perceived stress in patients undergoing PCI. Nurses can directly use CBT for patients undergoing PCI in supportive therapies in addition to the main treatments with the aim of strengthening and correcting the acute condition of patients and especially reducing the stress. A CBT support program aimed at improving some psychological aspects and reducing mindfulness-based stress can strengthen patients undergoing PCI in dealing with problems. Nurses and physicians should pay attention to the CBT program and help patients perform CBT interventions and control the complications and problems caused by crises such as cardiac disease.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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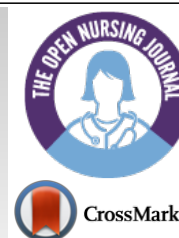
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RESEARCH ARTICLE

Evaluation of Nurses' Knowledge and Attitudes towards Older Adults and Associated Factors

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Abstract:

Background:

Due to the increased risk of developing chronic diseases among older adults, their demand for health care has increased. Preparing nurses to care for the older adults is one of the most difficult challenges in nursing education.

Objective:

This study investigated nurses' knowledge and attitudes towards older adults and demographic and occupational features that affect them.

Methods:

This cross-sectional study was conducted on 412 participants from July to October 2020. Patients were selected using a random sampling method. Three questionnaires were used: a socio-demographic form, an Older Patient in Acute Care Survey, and a Knowledge about Older Patients-Quiz.

Results:

According to the Pearson correlation test, there is a statistically significant and positive correlation between knowledge and general opinion ($P = 0.000$), ($r = 0.271$) as well as between practice experiences and general opinion ($P = 0.000$), ($r = 0.205$) of nurses about older adult's care. There was no statistically significant relationship between knowledge and practice experiences ($P = 0.857$), ($r = -.009$).

Conclusion:

Having a better understanding of the needs of the older adults would improve the quality of care that nurses provide to them.

Keywords: Nursing knowledge, General opinion, Practice experiences, Older adults, Nursing attitudes, Nursing education.

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1. INTRODUCTION

One of the world's major concerns is the growth of the older population, which is more prevalent in low- and middle-income countries [1]. The World Health Organization (WHO) considers people aged over 60 as older people and assumes three sub-periods such as young-old (60-74 years old), old (75-90 years old), and oldest (> 90 years old) [2]. There will be two billion older adults in the world by 2050, with 80 percent of them living in developing countries [3].

Older adults are at a greater risk of developing chronic diseases, which has increased the demand for health care [4]. Older adults make up the majority of patients admitted to most hospitals, and nurses' capacity to meet their physical, mental, and emotional needs depend on their knowledge, skills, and attitudes towards older adults [5]. Preparing nurses to care for the older population is one of the most difficult challenges in nursing education [6]. Studies suggest that patients benefit from nurses who have more knowledge, adequate expertise, and a positive attitude toward older adults, leading to shorter hospital stays and lower readmission rates for patients [7]. Research shows that many nurses have negative attitudes toward the care of older adults, which lead to unfavorable

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Fear of Cancer Recurrence and COVID-19 Anxiety Among Cancer Survivors: A Cross-Sectional Study in Southeast Iran

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Fear of Cancer Recurrence and COVID-19 Anxiety Among Cancer Survivors: A Cross-Sectional Study in Southeast Iran

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ABSTRACT

Cancer survivors face numerous therapeutic and health challenges during the COVID-19 epidemic. These patients experience high levels of anxiety and stress due to illness, external stresses, and crises, such as the COVID-19 epidemic. The present study showed a positive relationship between FCR and COVID-19 anxiety as well as moderate levels of FCR (according to the midpoint score of the questionnaire) and COVID-19 anxiety among cancer survivors. Factors affecting the mental condition of cancer survivors can play an important role in completing treatment and preventing disease exacerbation.

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KEYWORDS

Fear; cancer recurrence; anxiety; COVID-19; cancer survivors

Introduction

Cancer, one of the leading causes of mortality worldwide, accounts for approximately 13% of deaths in Iran (1). Cancer is the leading cause of death in developed countries and the second leading cause of death in developing countries (2). The International Agency for Research on Cancer (IARC) estimates approximately 14.1 million cases of cancer and 8.2 million deaths from cancer (3). The high prevalence of cancer is a major public health problem in Iran and in many other parts of the world (4).

There are 15.5 million cancer survivors in the United States, which are expected to reach 20.3 million cases by 2026 (5). Due to advances in cancer diagnosis and treatment, two-thirds of invasive cancer patients live more than 5 years, so the population of cancer survivors is growing (6). There is not a unique definition of who is a “cancer survivor” and what is “cancer survivorship.” However, cancer survivorship

begins at diagnosis and continues to balance the life. One, who remains alive, continues to function during and after overcoming a life-threatening disease (7). As the rate of cancer survivors is increasing, mental health concerns, such as anxiety and depression are part of the unmet needs of the recovery (6).

Cancer survivors usually suffer from anxiety (8) and persistent physical symptoms related to treatment such as pain, fatigue, and memory loss which is associated with fear of recurrence and changes in family relationships (9). These patients experience high levels of psychological stress due to anxiety and fear, because cancer can metastasize to other organs at any time during the treatment course (10).

Patients with cancer are afraid of various aspects of their disease (11). Fear of recurrence is a very common reaction to finishing cancer treatment (12). Patients with high levels of FCR experience higher physical anxiety and excessive distress, which are important for successful

psychological regulation in cancer patients (13). According to Smith et al. (2020), between 30.0 and 53.9% of the cancer population (i.e., patients and survivors) appear to experience sub-clinical or clinical FCR (14). Health behaviors, psychological reactions, and functional impairments were identified as FCR consequences (15). Patients with active cancer may find the disease more threatening and uncontrollable. Cancer survivors, who realized the severe effect of the disease on their lives, have reported higher FCR levels (16,17).

Intrusive thoughts are associated with psychological stress, anxiety, and incompatibility among cancer patients (18). Anxiety can be external, internal, real, or imaginary, and occurs in response to a perceived danger (19). Physicians have neglected anxiety, which is a common mental health problem among cancer survivors (20). Anxiety of cancer survivors depends on age, living alone, lack of social support, low economic status, recurrence, and metastasis. Cancer survivors often suffer from pain, fatigue, and memory loss, as well as fear of recurrence and changes in family relationships during their treatment (21).

Uncertainty surrounding the outbreak of coronavirus (COVID-19) disease has triggered mental health problems, including anxiety. COVID-19 was detected in China late in 2019 and quickly became a pandemic (22). According to the latest meta-analysis study on 50,466 patients, the virus has reached a mortality rate of 4.3% (23). Less than half of the patients with COVID-19 had diabetes, hypertension, and cardiovascular disease (24). Most of the victims also had previous underlying diseases with weak immune systems (25). As cancer patients and survivors have weak immune system, they are at risk for COVID-19 disease (26). It seems that the mortality rate of cancer survivors has been increasing during the COVID-19 pandemic (27). COVID-19 anxiety is mostly due to the unknown and confusing nature of the virus (28). Fear of the unknown has always been stressful for humans. Lack of scientific information exacerbates COVID-19 anxiety (29). Cancer patients are under pressure due to COVID-19 disease and have difficulty visiting hospitals and seeking treatment (30). A review of the literature showed

a high percentage of anxiety among cancer patients (31–34).

Many cancer survivors suffer from physical and psychological symptoms, such as fear of recurrence. Therefore, more information about the fear of recurrence can help patients to fight the disease and overcome such a fear, and give health managers a broader insight into the factors affecting fear of patients in continuing the treatment course. According to a review of the literature, few studies (35,36) have investigated the effect of COVID-19 anxiety on patients' fear of cancer recurrence. Therefore, this study aimed to investigate the relationship between FCR and COVID-19 anxiety among cancer survivors during the outbreak of COVID-19.

Methods

Study design and setting

This descriptive and analytical cross-sectional study was performed to determine the relationship between FCR and COVID-19 anxiety among cancer survivors during the outbreak of COVID-19 in Iran. The research population in this study were all cancer survivors referred to oncology centers and medical offices in Kerman. Data were collected from January to August 2021.

Sampling and sample size

Convenience sampling was conducted in Bahonar Hospital, Javad Al-A'meh Center, and doctors' offices (three oncologists and hematologists in Kerman) after necessary permissions were acquired. Participants in this study were people diagnosed with cancer, who have been treated and recovered. Cancer survivors, who met inclusion criteria according to the diagnosis of the treating physician, were included in the study. Participants were educated and had no problem in hearing and speaking. Exclusion criteria were participants who did not understand the questions of the questionnaire due to cognitive problems or unfamiliarity with the Persian language and those who did not fill in questionnaires completely.

As we did not find a similar study that assessed the correlation between FCR and

COVID anxiety, we used the Cochran's formula for an infinite population to estimate the sample size ($Z = 1.96$, $d = 0.065$, $n = 227$). According to dropout probability, 300 questionnaires were distributed; finally, 267 participants completed the questionnaire. The response rate was 89%. Power analysis calculations with G*Power software version 3.1.9.2. indicated that (power = 80% and $p = 0.05$) 264 participants were needed to detect an effect size of 0.35.

Ethical issues

After receiving the code of ethics No. IR.RUMS.REC.1399.237 from the ethics committee of Rafsanjan University of Medical Sciences, the researcher started sampling. Informed consent form was obtained from the participants before the study. The objectives of the study, confidentiality and anonymity of information were explained and participants were free to complete the questionnaire.

Data collection

The researcher started sampling in the morning, evening and night shifts after coordinating with doctors and centers. Study objectives and method were described to patients who met inclusion criteria and written consent was obtained. The questionnaire was completed when patients were in a favorable condition of treatment. The patients completed the demographic information questionnaire, fear of cancer recurrence inventory (FCRI), and corona disease anxiety scale (CDAS) in the presence of the researcher. The researcher interviewed patients to complete the questionnaire in case they were illiterate or had other problems.

Questionnaires

Demographic information questionnaire

In this study, two questionnaires of demographic and clinical information were used to assess personal information. (A) Demographic information included age, sex, marital status, number of children, level of education, occupation, income, living place. (B) Clinical information of patients

included type of cancer, a history of chemotherapy, a history of radiation therapy, a history of surgery, a history of other cancer treatments, duration of cancer recovery, receiving maintenance therapy, a history of addiction, a history of diabetes, a history of hypertension, a history of cardiovascular disease, other chronic illnesses, patient's infection with coronavirus, family members/friends/relatives' infection with coronavirus.

FCRI

The FCRI is a 42-item scale developed by Simrad et al. (2009) and it is rated on a Likert scale from zero to four (never = 0, rarely = 1, sometimes = 2, very often = 3, always = 4). In this questionnaire, "I believe that I have been treated" and "my illness will not return" are scored reversely (never = 4, rarely = 3, sometimes = 2, very often = 1, always = 0). The lowest score of this scale is zero, while the highest score is 168. This questionnaire includes seven dimensions (triggers (eight questions), severity (nine questions), psychological distress (four questions), coping strategies (nine questions), functioning impairments (six questions), insight (three questions) and reassurance (three questions). Higher scores indicate higher level of fear of cancer recurrence. In the original French version, internal consistency and the retest validity were reported to be 0.75 and 0.58, respectively (37). According to Bateti et al. (2019) in the Iranian population, Cronbach's alpha coefficient was 0.86, test retest reliability was 0.96, and the validity of triggers, severity, psychological distress, functioning impairments, insight, reassurance, coping strategies, and the whole questionnaire was 0.82, 0.84, 0.80, 0.85, 0.77, 0.79, 0.78 and 0.80, respectively (38). In the present study, the Cronbach's alpha of FCRI was 0.86.

The CDAS

Alipour et al. (2020) developed the CDAS to assess anxiety associated with corona illness in the Iranian population. This scale contains 18 items and two subscales measuring psychological (9 items) and physical (9 items) symptoms on a 4-point Likert scale (0 indicating never, 1 indicating occasionally, 2 indicating frequently, and 3 indicating always). This scale has a minimum

score of 0 and a maximum score of 54, with a higher score suggesting a greater level of anxiety. Additionally, scores ranging from 0 to 16 indicate no/mild anxiety, 17–29 indicate moderate anxiety, and 30–54 indicate severe anxiety. Regarding the psychological symptom subscale, scores of 0–5 indicate no/mild anxiety, 6–19 indicate moderate anxiety, and 20–27 indicate severe anxiety. Regarding the physical symptom subscale, scores of 0–1 indicate no/mild anxiety, 2–9 indicate moderate anxiety, while 10–27 indicate severe anxiety.

The CDAS demonstrates a high degree of internal consistency. Cronbach's alpha was reported to be 0.91 for samples aged 18–60 years. Convergent validity exists between the CDAS and the General Health Questionnaire-28 (GHQ-28) ($r = 0.48$, $p = 0.01$). Additionally, confirmatory factor analysis indicates that the CDAS has a goodness of fit index (39). Cronbach's alpha for CDAS was 0.94 in this study.

Data analysis

Data were analyzed using SPSS25 (SPSS Inc., Chicago, IL, USA) and descriptive and inferential statistical methods. Descriptive statistics, including frequency, percentage, mean and standard deviation were used to describe demographic characteristics and mean scores. ANOVA and independent t -test, and, in some cases, Mann–Whitney U and Kruskal–Wallis tests were used to determine the relationship between demographic and clinical information questionnaires, FCRI and CDAS. Pearson correlation coefficient was used to determine the relationship between FCRI and CDAS. Logistic regression was used to determine the relationship between different factors studied by FCRI. A significance level of 0.05 was considered.

Results

Participants' demographic and clinical characteristics

The mean age of the participants was 53.36 ± 11.40 years (Min = 21 and Max = 84). Eighty-one-point six percent of the samples were female ($n = 218$), 89.9% were married ($n = 240$),

85.0% were educated ($n = 227$), and 76.0% were unemployed ($n = 203$). The monthly income in the 66.7% ($n = 178$) of samples was moderate. Sixty-four-point eight percent of patients (173 participants) were diagnosed with breast cancer. Thirty-nine percent of individuals (104 participants) experienced a one-year remission from cancer. Almost 20% of the participants were previously infected with coronavirus (Tables 1 and 2).

Fear of cancer recurrence

The FCRI's mean score was 81.09 ± 16.32 . Table 3 summarizes the mean and standard deviation of the FCRI subscales. The mean score of FCR was almost near the midpoint of the inventory score i.e., 84.

The corona disease anxiety

The mean CDAS score was 11.90 ± 9.60 (range: 0–38). Fifteen participants (5.6%) were diagnosed with severe anxiety, 64 (24%) with moderate anxiety, and 188 (70.4%) with no/mild anxiety. The CDAS-psychological symptom subscale had a mean score of 9.15 ± 6.71 (Min = 0, Max = 27). Nineteen (7.1%) were diagnosed with severe anxiety, 168 (62.9%) with moderate anxiety, and 80 (30%) with no/mild anxiety. The CDAS-physical symptom subscale had a mean score of 2.74 ± 4.11 (Min = 0, Max = 18). Twenty-six individuals (9.7%) reported experiencing severe anxiety, 80 (30%) reported experiencing moderate anxiety and 161 (60.3%) reported experiencing no/mild anxiety. Only those with a history of cardiovascular disease had a significantly higher CDAS score than other subjects (Tables 1 and 2).

The association between FCR and the corona disease anxiety

There was a significant, positive, and moderate correlation between FCRI and CDAS. In addition, there was a significant and moderate correlation between FCRI subscales and CDAS (Table 3).

Table 1. Participants' demographic characteristics and their association with FCR and corona disease anxiety among the participants.

Variable	Frequency (valid percent)	Fear of cancer recurrence		Corona disease anxiety	
		Mean (SD)	Statistic test (<i>p</i> value)	Mean (SD)	Statistic test (<i>p</i> value)
Age (yr.) ^a					
≤40	34 (12.8)	80.56 (17.83)	$F = 1.53$ (0.21)	10.41 (7.34)	$F = 0.41$ (0.45)
41–50	73 (27.4)	83.77 (15.43)		12.25 (10.26)	
51–60	88 (33.1)	81.36 (15.07)		12.38 (9.18)	
>60	71 (26.7)	78.0 (17.70)		11.54 (10.45)	
Sex					
Female	218 (81.6)	82.26 (15.29)	$Z = -1.90$ (0.06)	12.06 (9.70)	$t = -0.61$ (0.54)
Male	49 (18.4)	75.88 (19.62)		11.14 (9.20)	
Marital status					
Married	240 (89.9)	80.91 (16.35)	$t = -0.53$ (0.60)	11.80 (9.53)	$t = -0.46$ (0.64)
Other	27 (10.1)	82.67 (16.26)		12.70 (10.38)	
Number of children					
0	31 (11.6)	86.64 (15.19)	$F = 1.27$ (0.28)	13.22 (8.57)	$F = 0.43$ (0.79)
1–2	68 (25.5)	78.96 (17.26)		11.16 (9.97)	
3–4	108 (40.4)	80.67 (15.54)		11.70 (9.30)	
5–6	44 (16.5)	81.95 (15.29)		12.93 (10.39)	
≥7	16 (6.0)	79.81 (21.17)		10.88 (10.28)	
Education level					
Uneducated	40 (15.0)	80.82 (16.22)	$F = 0.18$ (0.95)	12.90 (9.93)	$F = 0.70$ (0.59)
Elementary school	47 (17.6)	81.51 (14.90)		10.34 (9.42)	
Middle/high school	39 (14.6)	82.33 (17.32)		12.64 (10.25)	
Diploma	86 (32.2)	81.35 (15.87)		11.30 (9.50)	
Academic	55 (20.6)	79.62 (17.94)		12.89 (9.30)	
Job					
Employed	64 (24.0)	82.92 (16.25)	$t = 1.03$ (0.30)	12.39 (8.67)	$t = 0.47$ (0.64)
Unemployed	203 (76.)	80.51 (16.34)		11.74 (9.89)	
Income					
Very low	35 (13.1)	86.17 (16.75)	$H = 4.60$ (0.10)	11.83 (11.01)	$F = 0.28$ (0.76)
Low	54 (20.2)	83.63 (13.16)		12.76 (9.89)	
Moderate	178 (66.7)	79.22 (16.84)		11.65 (9.25)	
Living place					
Kerman city	130 (48.7)	79.69 (16.10)	$F = 1.14$ (0.33)	11.93 (9.28)	$H = 2.56$ (0.46)
Villages around Kerman	34 (12.8)	81.32 (16.22)		13.29 (9.32)	
Cities around Kerman	93 (34.8)	82.15 (15.60)		10.87 (9.40)	
Other cities	10 (3.7)	88.50 (24.50)		16.20 (15.03)	
Insurance					
Yes	258 (96.6)	81.02 (15.96)	$Z = -1.08$ (0.28)	11.86 (9.50)	$t = -0.28$ (0.78)
No	9 (3.4)	83.11 (25.78)		12.78 (12.92)	

SD: standard deviation; *t*: independent *t* test; *F*: analysis of variance; *H*: Kruskal–Wallis *H*. Other: single/divorced/widow(er).^aMissing value.

The correlates of FCR

Participants with a chemotherapy history had a higher FCRI score than those without a chemotherapy history. Participants with a history of cardiovascular illness had a higher FCRI score than those who did not (Tables 1 and 2). Multiple regression models were used to investigate the association between study factors and FCRI score. The FCRI score was related to the CDAS score, income, and history of chemotherapy. On the other hand, a one-point rise in the CDAS score results in a 0.38-point increase in the FCRI score. Additionally, participants with a greater income and no history of chemotherapy had lower FCRI scores than those with a lower income and a history of chemotherapy (Table 4).

Discussion

Cancer survivors, who suffer from FCR, must consult with the healthcare team (40). This study aimed to determine the relationship between the FCR and COVID-19 anxiety among cancer survivors. The present study showed that the mean score of FCR was almost near the midpoint of the inventory score. Consistent with our results, study Kim and Kim in the South Korea (2022) showed that the fear of cancer recurrence was high in patients with breast cancer (41). Also, Cho and Park in the US (2017) found that approximately half of cancer survivors had moderate to high FCR and 13% had severe FCR (42). Thewes et al. (2018) in the Netherlands found that 62% of the patients had high FCR levels

Table 2. Participants' clinical characteristics and their association with FCR and COVID-19 disease anxiety among the participants.

Variable	Frequency (valid percent)	Fear of cancer recurrence		Corona disease anxiety	
		Mean (SD)	Statistic test (<i>p</i> value)	Mean (SD)	Statistic test (<i>p</i> value)
Type of cancer					
Breast	173 (64.8)	81.95 (14.78)	$H = 3.04$ (0.38)	12.0 (9.73)	$F = 0.92$ (0.43)
Gastrointestinal	33 (12.4)	77.36 (17.66)		13.54 (10.64)	
Uterus/ovary	25 (9.4)	84.08 (18.06)		12.04 (9.04)	
Others	36 (13.4)	78.25 (20.26)		9.78 (8.26)	
History of chemotherapy					
Yes	262 (98.1)	81.38 (16.22)	$t = 2.12$ (0.03)	11.80 (9.64)	$t = -1.15$ (0.25)
No	5 (1.9)	65.80 (15.86)		16.80 (5.89)	
History of radiotherapy					
Yes	201 (75.3)	80.68 (16.06)	$t = -0.72$ (0.48)	12.01 (9.93)	$t = 0.34$ (0.73)
No	66 (24.7)	82.33 (17.16)		11.55 (8.59)	
History of surgery					
Yes	239 (89.5)	81.33 (16.18)	$t = 0.43$ (0.47)	12.14 (9.80)	$t = 1.21$ (0.23)
No	28 (10.5)	78.96 (17.67)		9.82 (7.50)	
History of other cancer treatments					
Yes	3 (1.1)	79.0 (10.0)	$t = -0.22$ (0.82)	6.67 (10.69)	$Z = -1.01$ (0.31)
No	264 (98.9)	81.11 (16.39)		11.95 (9.59)	
Duration of cancer remission (yr.)					
≤1	104 (39.0)	84.36 (15.47)	$F = 1.98$ (0.08)	12.30 (9.56)	$F = 0.58$ (0.71)
1.01–2	57 (21.2)	80.39 (15.66)		12.77 (10.90)	
2.01–3	25 (9.4)	76.04 (17.50)		9.56 (7.89)	
3.01–4	20 (7.5)	77.30 (20.16)		11.80 (8.06)	
4.01–5	17 (6.4)	75.53 (17.17)		9.82 (8.74)	
>5	44 (16.5)	81.0 (15.32)		11.98 (9.90)	
Receiving maintenance treatment ^a					
Yes	119 (44.7)	81.69 (14.97)	$t = 0.57$ (0.57)	11.86 (9.99)	$t = 0.03$ (0.98)
No	147 (55.3)	80.54 (17.40)		11.89 (9.33)	
History of addiction					
Yes	30 (11.2)	80.67 (15.16)	$t = -0.15$ (0.88)	11.77 (9.38)	$t = -0.08$ (0.94)
No	237 (88.8)	81.14 (16.49)		11.91 (9.65)	
History of diabetes					
Yes	43 (16.1)	82.14 (17.60)	$t = 0.46$ (0.64)	12.12 (10.67)	$t = 0.16$ (0.87)
No	224 (83.9)	80.88 (16.10)		11.85 (9.41)	
History of hypertension					
Yes	87 (32.6)	81.15 (14.41)	$t = 0.04$ (0.96)	12.84 (10.09)	$t = 1.12$ (0.26)
No	180 (67.4)	81.06 (17.21)		11.44 (9.35)	
History of cardiovascular disease					
Yes	36 (13.5)	86.47 (12.13)	$Z = -2.16$ (0.03)	15.03 (9.58)	$t = 2.12$ (0.04)
No	231 (86.5)	80.25 (16.75)		11.41 (9.53)	
History of other chronic disease					
Yes	27 (10.1)	78.07 (16.68)	$t = -1.01$ (0.31)	10.04 (9.14)	$t = -1.06$ (0.29)
No	240 (89.9)	81.42 (16.28)		12.10 (9.64)	
Infected with coronavirus					
Yes	52 (19.5)	81.29 (17.62)	$t = 0.10$ (0.92)	9.83 (8.86)	$t = -1.74$ (0.08)
No	215 (80.5)	81.04 (16.03)		12.40 (9.72)	
Family member infected with coronavirus					
Yes	103 (38.6)	81.18 (16.15)	$t = 0.08$ (0.94)	11.62 (9.41)	$t = -0.38$ (0.70)
No	164 (61.4)	81.02 (16.48)		12.07 (9.74)	
Friend/relative infected with coronavirus					
Yes	174 (65.2)	81.09 (15.92)	$t = 0.01$ (0.99)	11.86 (9.44)	$t = -0.09$ (0.93)
No	93 (34.8)	81.08 (17.13)		11.97 (9.95)	

Addiction: opium, alcohol, and tobacco; SD: standard deviation; *t*: independent *t* test; *F*: analysis of variance; *H*: Kruskal–Wallis *H*; *Z*: Mann–Whitney *U*.^aMissing value.

(40). Mattsson et al. (2018) also showed that 61% of the patients had high FCR levels (43). However, a review of the literature shows a variable rate of FCR in studies. Yang et al. (2019) found that the prevalence of FCR among cancer survivors varied from 31 to 85.2% and psychological distress had a positive relationship with high FCR (44). Different reports can be due to the differences in the study population and the socio-cultural background of the patients. In

addition, different tools were used in the studies. Other reasons could be disagreement over the definition of clinical FCR and insufficient efforts to create clinically cut-off points for FCR. Establishing clinical cut-offs on FCR screening measures is crucial to tailoring individual care and conducting rigorous research. Fardell et al. (2018) suggest using a higher cut-off on the Fear of Cancer Recurrence Inventory-Short Form (FCRI-SF) than previously reported to identify

Table 3. The correlation between FCR and COVID-19-related anxiety among cancer survivors.

Variable	Mean	Standard deviation	Pearson correlation coefficient (<i>p</i> value)		
			COVID-19 anxiety	Psychological subscale	Physical subscale
Fear of cancer recurrence					
Triggers	15.04	5.60	0.25 (<0.001)	0.24 (<0.001)	0.20 (0.001)
Severity	16.20	7.06	0.31 (<0.001)	0.29 (<0.001)	0.24 (<0.001)
Psychological distress	5.78	3.63	0.31 (<0.001)	0.24 (<0.001)	0.32 (<0.001)
Coping strategies	23.33	6.33	−0.18 (0.003)	−0.16 (0.007)	−0.16 (0.008)
Functioning impairments	10.44	4.53	0.22 (<0.001)	0.16 (0.01)	0.25 (<0.001)
Insight	4.12	3.22	0.36 (<0.001)	0.31 (<0.001)	0.34 (<0.001)
Reassurance	6.18	1.97	0.25 (<0.001)	0.28 (<0.001)	0.13 (0.03)
Total	81.09	16.32	0.38 (<0.001)	0.34 (<0.001)	0.34 (<0.001)

Table 4. The multiple regression analysis summary for predictors of FCR among cancer survivors.

Variable	<i>B</i>	SE ^a	Beta	<i>t</i>	<i>p</i>	95% Confidence interval for <i>B</i>	Adjusted <i>R</i> ²
Fear of cancer recurrence							
Constant	92.65	9.42	–	9.83	<0.001	74.09–111.21	0.19 [*]
CDAS score	0.65	0.09	0.38	6.91	<0.001	0.46–0.84	
Sex	4.11	2.38	0.10	1.73	0.085	−0.58 to 8.80	
Income	−3.18	1.28	−0.14	−2.48	0.01	−5.71 to −0.65	
History of chemotherapy	−18.36	6.68	−0.15	−2.75	0.006	−31.50 – −5.22	

CDAS: Corona Disease Anxiety Scale; Sex: male = 1; female = 2; history of chemotherapy: yes = 1, no = 2).

^{*}*F* = 16.61, *p* < 0.001.

^aStandard error.

clinically significant FCR (cut-off ≥ 22 on the FCRI-SF) (45). In the present study, there is not a valid cut-off point for the 42-item FCR version. Therefore, these results should be interpreted with caution. However, the findings of the current study confirm that FCR is a common concern among cancer survivors. Some studies used cognitive-behavioral model (CBM) to reduce FCR (46). In addition, psychological interventions for FCR have revealed a small but robust effect at post-intervention (47). The point to consider is the application and interpretation of FCRI in cancer clinics. According to Smith et al. (2020), there are still issues with the application and interpretation of the FCRI. The FCRI's suitability for assessing fear of progression as well as recurrence is unclear, the FCRI total score is controversial, and the FCRI-SF cannot be used to screen for clinical FCR, as items do not reflect established characteristics of clinical FCR (14).

Chronically ill patients commonly report fear of recurrence. These patients experience fear of cancer recurrence, fear of progression), and anxiety disorder and somatic symptom disorder (48). Fear of cancer recurrence (FCR) is prevalent among survivors. However, there is no comprehensive and universally accepted theoretical framework for FCR intervention. The Self-Regulatory Executive Function (S-REF) model

and Relational Frame Theory are two theoretical approaches that are highly relevant to FCR. The novel theoretical framework focuses on the multi-dimensional nature of FCR and the importance of cognitive processing and metacognitions in the development and maintenance of FCR (49).

The results of our study showed that 5.6% had severe COVID-19 anxiety, while 24% had moderate anxiety (about 30% had moderate to severe anxiety). In addition, only those with a history of cardiovascular disease had higher CDAS scores than others. Consistent with the results of the present study, Dehghan et al. (2020) showed that 28.3% of cancer patients had moderate to severe anxiety (32). Amatory et al. (2018) found that 15.22% of adult and young cancer survivors suffered from anxiety (34). Boy et al. (2011) showed that 24% of the cancer survivors had anxiety (31). Cancer is a life-threatening condition with a high risk of death among oncologic patients, which may explain why patients are afraid of problems related to the disease. Cancer survivors may be concerned about the effect of COVID-19 on the cancer recurrence or progression, which makes them more prone to anxiety symptoms (50). COVID-19 causes a hyper-activation of immune cells, resulting in lung inflammation. Recent studies showed that COVID-19 induces the production of factors previously implicated in

the reawakening of dormant breast cancer cells such as neutrophil extracellular traps (NETs). The presence of NETs and of a pro-inflammatory microenvironment may therefore promote breast cancer reactivation, increasing the risk of pulmonary metastasis (51).

The present study showed that according to the CDAS-related psychological symptoms subscale, 70% had moderate to severe anxiety while according to the CDAS-related physical symptoms subscale, nearly 40% had moderate to severe anxiety. A review of the literature showed no relevant studies on cancer survivors during the COVID-19 pandemic, so similar studies on cancer patients were reported. Consistent with the results of the present study, Dehghan et al. (2021) showed that according to the psychological symptoms subscale (CDAS), 61.4% of the participants had moderate to severe anxiety whereas according to the subscale of physical symptoms, 38% of the participants had moderate to severe anxiety (32). Ayubi et al. (2021) showed that the prevalence of depression and anxiety among cancer patients could increase significantly during the COVID-19 epidemic (50). Some studies showed that cancer survivors usually suffered from persistent physical symptoms related to treatment such as pain, fatigue, and memory loss, as well as psychosis due to fear of recurrence and changes in family relationships (21). The prevalence of COVID-19 disease and its negative effects on chronic patients have exacerbated the physical and mental problems of the COVID-19 patients. COVID-19 anxiety is mostly due to the unknown and confusing nature of the virus (28). Fear of the unknown reduces the perception of immunity and has always been stressful for humans. Lack of scientific information about COVID-19 also exacerbates such anxiety (29). Chronic patients, including those with cancer, are under pressure due to COVID-19 disease and have difficulty visiting hospitals and seeking treatment (30). All of these factors can cause high levels of anxiety among cancer patients, so managers should perform effective psychological interventions for them.

Another important result of our study was a positive and moderate relationship between FCR and CDAS. Consistent with the results of the

present study, Thewes et al. (2018) showed that high FCR was significantly associated with lower levels of psychosocial function and higher levels of anxiety and psychological distress among cancer survivors (40). Yang et al. (2019) showed that psychological distress was positively associated with higher FCR levels among cancer survivors (44). Liu et al. (2018) in Singapore found that FCR was associated with more severe symptoms of depression and anxiety among cancer survivors (52). A study by Curran et al. (2020) (53) showed the FCR was predicted by death anxiety. Cancer patients who experience FCR may have shattered their core beliefs, feared more death, and found cancer to be a threat. Some evidence also suggests that stressful events predispose cancer survivors to higher rates of FCR, anxiety, and depression (54). However, FCR may have attenuated relations with anxiety and depression communities and emerged as a relatively independent, unique experience (55).

The outbreak of COVID-19 disease formed a wave of fear in the society (56), which caused anxiety, stress, and insecurity in the general population (28,57). On the other hand, quarantine and preventive measures can also have negative psychological effects (58). Some studies have reported a high percentage of mental health problems in society (59). These conditions and people's efforts to manage stressful life events may greatly waste patients' energy and psychological resources and make them more vulnerable to mental illness (60). However, the diagnosis of cancer is associated with a number of issues that cause psychological consequences (61) and patients are highly afraid of recurrence of their disease. FCR can be exacerbated with COVID-19 disease and related psychological consequences because cancer survivors consider their symptoms or comorbidities as a sign of COVID-19 disease and interpret their symptoms as a warning sign of cancer recurrence (62). To reduce FCR, cancer survivors should receive psychological counseling to deal with the complications and anxiety caused by the disease and stressors. Cancer survivors should be trained to understand and prevent the COVID-19 disease and its symptoms better.

The present study showed that FCR was associated with higher income and a history of

chemotherapy. Consistent with the results of the present study, Yang et al. (2019) in China found that patients with low monthly income and those undergone chemotherapy tended to report higher FCR (63). However, some studies have suggested that the personal income of most cancer survivors is the only important predictor of social relationships (64), which can lead to better communication of patients with the healthcare system and they can overcome the FCR by receiving more information about their disease. Mattsson et al. (2018) showed that cancer patients with previous complications might have more problems in future (43). A history of chemotherapy may be reminiscent of previous problems related to the disease that increase FCR among cancer survivors. Contrary to the results of the present study, Sun et al. (2019) showed that being single and pessimistic, having stressful life events, and physical problems were associated with higher FCR among cancer survivors. Patients who did not receive radiation therapy reported higher levels of anxiety (65). Thewes et al. (2018) showed that demographic and medical variables were not related to FCR level among cancer patients (40). Other studies have shown the correlation between younger age and higher FCR among breast cancer survivors (66). Yang et al. (2018) showed that single cancer survivors had higher FCRs than those who were married (67). Thewes et al. (2013) also found that past cancer experiences, having children, social support, and attitudes toward childbearing were not associated with FCR (54). Longitudinal studies are required to determine the factors influencing FCR. Early detection of FCR as well as early psychosocial care may prevent long-term psychological complications. Arrangements need to be made for cancer survivors to talk to health care professionals about their thoughts and feelings about cancer.

Limitations

Given the results of the present study, several possible limitations must be considered. Methodological differences such as sampling, target population and type of questionnaire are important limitations for measuring and

interpreting the results. It is not clear to what extent the FCR reported in the present sample represents the level of FCR in a wider population. Therefore, the results should be interpreted with caution. Longitudinal and population-based studies are needed to understand FCR changes over time and provide insights into the FCR predictor. Further research is also needed to identify the prevalence and predictor of higher FCR in a large sample of cancer survivors. The majority of participants were female because men were reluctant to participate and there might be sampling bias, so the results should be interpreted with caution and cannot be generalized to all cancer survivors. Given issues such as the definition of cancer survivors, and the fact that breast cancer was the most prevalent among participants, it is necessary to consider these issues in future studies and be careful in interpreting the results. Given that the questionnaires were completed in the presence of the researcher or sometimes by the researcher on behalf of the patients (interview), the participants' responses may be influenced by expectations/the effects of social-desirability bias. Therefore, these results should be interpreted with caution.

Conclusion

The present study showed that cancer survivors had moderate levels of FCR and COVID-19 anxiety, so effective clinical interventions are needed to reduce FCR and COVID-19 anxiety among cancer survivors. There is also a positive association between FCR and COVID-19 anxiety. Cancer patients are under pressure due to COVID-19 conditions, and their anxiety makes treatment and follow-up difficult. On the other hand, it will increase patients' fear of cancer recurrence. Managers and the healthcare system should perform effective psychological interventions to reduce anxiety and provide educational strategies to reduce FCR among cancer survivors.

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Ethical approval

After receiving the code of ethics No. IR.RUMS.REC.1399.237 from the ethics committee of Rafsanjan University of Medical Sciences, the researcher started sampling. Informed consent form was obtained from the participants before the study. The objectives of the study, confidentiality and anonymity of information were explained and participants were free to complete the questionnaire. The Medical Ethics Committee of Rafsanjan University of Medical Sciences officially approved this study (No. IR.RUMS.REC.1399.237). All participants consented to participate in this study. All participants consented to publish the results.

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Iranian nurses' knowledge and attitude toward complementary and alternative medicines: Is there any relation with quality of nursing care?

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Background: Nurses play an important role in advising and guiding patients on effective treatments, and in this situation, it is better to be aware of complementary and alternative medicine (CAM) as well as the effects and side effects of different procedures. In addition, the quality of nursing care is directly related to the nurse's knowledge of the different treatments and preventions of different diseases and conditions. The present study aimed to investigate Iranian nurses' knowledge and attitude toward complementary and alternative medicines (CAMs) as well as their correlation with the quality of patient care.

Materials and methods: This cross-sectional study included 267 clinical nurses from three hospitals in southern Iran. The participants were recruited using convenience sampling methods in 2020–2021. A demographic questionnaire, knowledge and attitude toward CAM questionnaires, and the Quality Patient Care Scale were used to collect data.

Results: The mean score of CAM knowledge was 26.51, which was less than the questionnaire midpoint of 39. The mean score of attitudes toward CAM was 63.84, which was more than the questionnaire midpoint of 57. The mean score of the quality of patient care was 197.80, which was more than the questionnaire midpoint of 130. There was no significant correlation between knowledge about CAM, quality of patient care, and its dimensions. In addition, there was no significant correlation between attitudes toward CAM, quality of patient care, and its dimensions ($P > 0.05$).

Conclusion: The results of the present study showed that nurses' attitudes toward the use of CAM are positive and can be a sign of their readiness to use and further integrate clinically approved CAM in patient nursing care.



Review Article

Male factor testing in recurrent pregnancy loss cases: A narrative review

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Abstract

Recurrent pregnancy loss is a distinct disorder defined as the loss of at least 2 pregnancies before the 20th wk of gestation. With half of the genome of the embryo belonging to the father, the integrity of the sperm genome is crucial for a successful pregnancy. Semen analysis is recommended for men in such cases to evaluate sperm concentration, morphology, vitality and motility. However, other important sperm parameters such as sperm epigenetics, aneuploidy, Y chromosome microdeletion and chromatin integrity also correlate with successful pregnancy and delivery rate. This article examines the use of different sperm tests and their importance in male partners of women suffering from recurrent pregnancy loss.

Key words: DNA fragmentation, Sperm, Y chromosome, Recurrent pregnancy loss.

1. Introduction

Men are accountable for 50% of the genomes of an embryo. However, they are usually not considered in clinical studies and the treatment management in recurrent pregnancy loss (RPL) cases (1). For many years, women have been held responsible for all forms of infertility and reproduction defects. Undoubtedly, women play an important role in reproduction and several complications may arise due to female infertility (2). Although many new clinical studies focus on the effect of male health on infertility and abortion (3). There are still not enough studies on the role of paternal factors in RPL (4).

Moreover, very few studies have assessed and demonstrated the role of the male factor and its genetics in cases of recurrent abortion (5). The main diagnostic test to assess male fertility is a simple screening, including standard and routine semen analysis and some genetic testing; however, finding the best tests for diagnosing male infertility remains in debate (6). Paternal age is a known factor in cases of miscarriage, and older age in men can elevate the risk of spontaneous abortion (7). The hypothesis that men are fertile at any age while women's fertility is age-dependent is not totally correct (8, 9). Although, the relationship between advanced paternal age and the risk of spontaneous abortion

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New challenge for the health care system in Iran: The need to prepare for the monkeypox virus

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KEYWORDS

care, challenge, health, monkeypox, virus

Introduction

Human monkeypox was first reported as a common human-animal disease in 1970 in Central Africa (1). It is caused by an orthopox virus that can induce complications such as pneumonitis, encephalitis, sight-threatening keratitis, and secondary bacterial infections (1, 2). The published mortality rate varies considerably and is reported to vary between 0%–10% (3). Monkeypox can cause a severe clinical condition with systemic signs and symptoms. A study by Huhn et al. (2) revealed that 15% of monkeypox patients (34 patients) developed severe symptoms and 26% were hospitalized for more than 48 h. Patients under the age of 18 are more likely to be admitted to the intensive care unit (2).

Subsections relevant for the subject

According to the WHO, on May 29, 2022, monkeypox was reported in 23 countries; on the whole, a total of 257 laboratory-confirmed cases and about 120 suspected cases have been reported. However, more cases are expected to be identified in countries that have not yet reported cases. Cases have been reported mainly among homosexual Men having Sex with Men (MSM) (4). A new study by Adler et al. found that infection prevention and control are difficult due to long-term upper respiratory tract viral DNA shedding after skin lesion resolution (5). However, of the three reported cases of acquired monkeypox in the UK, one was a health care worker who received the virus in a hospital setting (5). Social media in Iran deals with news related to monkeypox cases. A wave of questions has emerged among people about the effects and problems caused by this disease, which needs to be considered by the authorities to manage and prevent possible dangers. Besides, in the UAE, in the vicinity of Iran, three cases of monkeypox have been reported (6).

RESEARCH

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Postpartum depression and its correlates: a cross-sectional study in southeast Iran

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Abstract

Background: Postpartum depression has a negative impact on both infants and women. This study aimed to determine the correlates of postpartum depression in women in southern Iran.

Methods: This cross-sectional study was performed on 186 mothers who had recently given birth to a baby. Data were collected using the demographic form, Quality of Prenatal Care Questionnaire, Edinburgh Postnatal Depression Scale (EPDS), Depression, Anxiety and Stress Scale—21 items (DASS-21) 3 days after delivery and EPDS and DASS-21 6 months after childbirth.

Results: Postpartum depression (PPD) was 24.2% and 3.2% 3 days and 6 months after delivery, respectively. Anxiety, Prenatal Care Quality and educational level predicted 34.0% of the variance of PPD 3 days after delivery ($R^2 = 34.0\%$). Anxiety, type of delivery, and stress predicted 24% of the variance of PPD 6 months after delivery ($R^2 = 24.0\%$).

Conclusions: With an increase in stress and anxiety and a reduction in the quality of prenatal care, the risk of postpartum depression increases. Therefore, attention to the quality of prenatal care and postpartum stress and anxiety should be carefully evaluated to prevent PPD. Psychological support and interventions are recommended to promote the mental health of women before and after childbirth.

Keywords: Pregnant, Mother, Anxiety, Stress, Postpartum depression

Introduction

Postpartum depression (PPD) is one of the most common disorders in women worldwide [1]. PPD is one of the most frequent complications, occurring in 10–15% of women after delivery [2]. PPD is also more prevalent in poor and middle-income countries than in rich ones. In Asian countries, the prevalence of this disorder varies from 7 to 33% [3]. In Iran, a study using the Edinburgh questionnaire showed that about 26% of the women who naturally conceived suffered from PPD [4]. The disorder has negative consequences for the mother and her child.

In addition to having negative effects on a mother's quality of life [5], PPD can increase a mother's chances of developing depression within 5 years after giving birth, so that Vigod et al. [6] reported that the risk of episodes of depression in women with PPD was twice as high in other women [6]. PPD is also harmful to the child and can delay his/her physical, social, and cognitive development [7].

Five common risk factors have been identified for PPD, including maternal characteristics, delivery characteristics, psychological factors, social support, and coping strategies [8]. Various studies have considered the socio-economic level of the mother, especially the low level of education and poor economic status, as factors related to PPD [9–11]. However, Cooper et al. [12] pointed out the significant heterogeneity of

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Availability of data and materials

The dataset generated and/or analysed during the current study are not publicly available due to promises of participant anonymity and confidentiality but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the World Medical Association's Declaration of Helsinki. This research has a code of ethics No. IR.RUMS.REC.1398.118 from Rafsanjan University of Medical Sciences. Before sampling, informed written consent was taken from women after delivery and they were explained about the role of the researchers and the participants, the objectives of the study, confidentiality and anonymity of the information and the voluntary participation and withdrawal from the study at any time.

Consent for publication

Not applicable.

Competing interests

The author(s) declared no potential conflicts of interest for the research, authorship, and/or publication of this article.

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Quality of life in terminally ill cancer patients: what is the role of using complementary and alternative medicines?

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Abstract

Background and purpose Cancer is the world's second greatest cause of mortality and a leading cause of death in both developed and developing countries. Patients employ a number of complementary and alternative medicine (CAM) methods to deal with the problems and difficulties of cancer, which can have an impact on their quality of life (QOL). The aim of the present study was to assess the correlation between QOL and the use of different CAM methods in terminally ill cancer patients.

Methods This was a cross-sectional study. In southern Iran, 238 individuals with advanced cancer were studied in oncology centers and doctors' offices. During the months of January to August 2021, patients were selected using convenience sampling. A demographic information questionnaire, the EORTC core quality of life questionnaire, and the CAM questionnaire were used to collect data.

Results The results showed that terminally ill cancer patients had a good quality of life. Last year, 85.7% of participants used at least one kind of CAM. Furthermore, 45.4% of participants used only one form of CAM, 30.3% used two types of CAM, 6.7% used three types of CAM, and 3.4% used four to five types of CAM. When all CAM users were compared to non-CAM users, CAM users had significantly higher social QOL and overall quality of life. Two subscales of QOL symptoms and function were correlated with cancer history, income, and use of CAMs, and the scores of QOL symptoms and function were greater in CAM users compared to non-CAM users. Among all the study variables, only the usage of CAM was correlated to overall QOL among terminally ill cancer patients.

Conclusion The current study found that using CAM could affect different aspects of QOL in terminally ill cancer patients. As a result, it is feasible that using CAM could help these people enhance their health and QOL.

Keywords Quality of life · Physical and psychological symptoms · Complementary and alternative medicines · Cancer

Introduction

Cancer is a term that refers to a set of diseases that are caused by abnormal cell growth in the body [1, 2]. Cancer is associated with a wide variety of problems, including physical and

psychological complications that, in the absence of definite therapy, can impair a person's quality of life and disrupt their life [3]. Cancer patients develop depression as a result of the disease's denial and anger, which are related to feelings of loss, failure, despair, hopelessness, helplessness, emptiness,

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