Prevalence and Associated Factors of Depression Symptoms in Women Newly Diagnosed with Breast Cancer in Kazakhstan

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Abstract

Introduction: Diagnosis of breast cancer is associated with the presence of psychological disorders including depression. There is a lack of study examining the prevalence of depression among newly diagnosed breast cancer patients in Kazakhstan. Objective: This study aims to assess the prevalence and associated sociodemographic and clinical factors of depression symptoms in women newly diagnosed with breast cancer. Methods: 162 newly diagnosed breast cancer patients at the oncology center in Almaty were recruited for this study. Data were collected using a structured questionnaire on sociodemographic and clinical information and the Beck Depression Inventory-II scale. Results: The mean age of the patients was 54.41 years (SD=8.1). 95% of participants had unilateral breast cancer, and 79% of participants had stage I or stage II breast cancer. 73% of patients said that they do not have reliable social support. 46% of patients had symptoms of moderate depression, and 31% of patients had symptoms of severe depression. According to the multivariate analysis, factors associated with depression symptoms were: social status, household income level, reliability of social support, and stage of breast cancer. Conclusion: The prevalence of depression symptoms is very high among newly diagnosed breast cancer patients. Unemployed or retired patients, with a lower household income, and no reliable social support diagnosed with an advanced stage of breast cancer are especially at high risk for developing depression.

Keywords: Psychological distress- cancer patients- social support- income

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Introduction

Breast cancer was the most prevalent cancer type in 2021. According to the World Health Organization (WHO), breast cancer accounted for 12% of all new annual cases of cancer globally (World Health Organisation, 2022). At the same time, the global survival rate of women with breast cancer is alarmingly low, with a 5-year pooled survival rate of 73% (95% CI [71-75]), and a 10-year pooled survival rate of 61% (95% CI [54-67]) (Maajani et al. 2019). Previous studies show that the breast cancer burden (incidence and mortality rate) significantly increased in different populations (Huang et al., 2021). In general, there is wide variability in breast cancer prevalence worldwide, with more developed countries having a higher number of cases and lower survival rates in less developed countries (Wilkinson and Gathani, 2022). This difference could partly be explained by the implementation of the early screening programs, genetic factors, environmental factors, and lifestyle factors (Luo et al., 2022).

Furthermore, diagnosis of breast cancer is often associated with the presence of psychological disorders including depression (Zainal et al., 2013). In the development of depression and cancer, there are some similarities on a molecular and immunologic level (Faye, 2021). Depression in women with breast cancer is associated with greater disability, poorer quality of life, and lower survival rate (Ng et al., 2017; von Heymann-Horan et al., 2013; Mols et al. 2013). In a 13 year follow up study, cancer patients with depression at baseline had a lower survival rate (Saini et al., 2021). The overall prevalence of depression among breast cancer patients varies significantly from 3.0% to 95.9% (Pilevarzadeh et al., 2019). Different studies reported that the prevalence of depression is especially high during the first year after diagnosis (Zainal et al., 2013).

Despite the huge burden of depression, most of the
patients do not receive adequate treatment and are at increased risk for longer depressive episodes and shorter remission periods (Halflin, 2007).

Even though the incidence of breast cancer in Kazakhstan has been thoroughly studied and monitored (Toguzbayeva et al., 2021; Igissinov et al., 2019; Shamsutdinova et al., 2020), there is a lack of study examining the prevalence of depression among newly diagnosed breast cancer patients in Kazakhstan.

This study aims to assess the prevalence and associated sociodemographic and clinical factors of depression symptoms in women newly diagnosed with breast cancer, to identify independent predictors of depression risk.

Materials and Methods

Study design and sample

This analysis is a part of the descriptive, cross-sectional study that was conducted between May 2021 and February 2022 in the oncology hospital in Almaty. The sample consisted of 214 randomly selected newly diagnosed breast cancer patients who came to the oncology department and met the inclusion criteria. The inclusion criteria: female adults with a histologically confirmed diagnosis of breast cancer within six months; stage I to IV breast cancer according to the TNM classification of malignant tumors; Russian or Kazakh language proficiency; ability to provide informed consent. Exclusion criteria: current psychotic disorder, manic episode, serious neurological disorder, intellectual disability, or developmental disorder; current active suicidal ideation; referral to palliative care. Out of 214 approached patients, 162 agreed to participate and met the inclusion/exclusion criteria (response rate = 75.7%).

The Ethics Committee of the Kazakh Medical University of Continuing Education approved this study protocol. All participants were given a full explanation of the study purpose and scope and signed an informed consent form. The study was conducted following the principles of confidentiality, anonymity, and informed consent according to the Declaration of Helsinki and its revisions.

Assessment Instruments

Data were collected by face-to-face interview using a structured and pretested questionnaire and a self-report Beck Depression Inventory-II (BDI - II) form.

The questionnaire had two sections. The first section included individual sociodemographic variables such as age, place of residence, marital status, number of children, social status, educational level, income level, social support, and reliability of social support. We used nominal average income per person rate in 2020 (116 - 232,252 kzt) to range the income level. Availability of social support and the reliability of social support were bipolar questions. The second section included clinical variables such as clinical diagnosis, histopathological diagnosis, and stage of breast cancer. There were no treatment questions for newly diagnosed patients.

The BDI – II is a 21 item self-administered survey that has a list of four statements arranged in increasing severity about a particular symptom of depression or a characteristic attitude. Each of the 21 items is rated on a four-point scale ranging from “0” (symptom is minimal) to “3” (symptom is severe). The BDI-II total score is calculated as a sum of all items as a single score. The BDI-II score of 0-13 is considered a minimal range, 14-19 is mild, 20-28 is moderate, and 29-63 is a severe range of depression symptoms.

Statistical Analyses

To present breast cancer patients’ socio-demographic and clinical characteristics (independent variables) we calculated mean and standard deviation for continuous data, and frequency with percentage for categorical data. The occurrence of depression was used as an outcome (dependent variable). We used univariate logistic regression analysis to investigate the association between potential prognostic determinants and the outcome, and we calculated the odds ratio with a 95% confidence interval. Those prognostic determinants that were univariately associated with depression were included in a multivariate logistic regression model and were used as a measure of association. The fit of the multivariate model was tested with the Hosmer-Lemeshow goodness-of-fit test. All p-values were two-tailed, and statistical significance was accepted with a p-value under 0.05. Data analysis was performed using IBM SPSS for Windows (version 21.0, SPSS INC., Chicago, IL, USA) statistical software.

Results

Sociodemographic and Clinical Characteristics

A total of 162 newly diagnosed breast cancer patients were included in this study. The mean age of the patients was 54.41 years (SD=8.1). Most of the patients were between 50 and 59 years of age (47%), married (52%), employed (41%), had 3 to 4 children (57%), had either a bachelor’s degree (39%), were urban residents (54%), had a household monthly income between 116, 126 – 232,252 kzt (57%), did not drink (41%), did not smoke (67%), did not engage in physical activity (54%), and had social support (91%). Only 27% of participants said they could rely on their social support person or persons. 95% of participants had unilateral breast cancer, 85% of participants had invasive ductal carcinoma, and 79% of participants had stage I or stage II breast cancer. Sociodemographic and clinical characteristics of the study participants are provided in Table 1.

Prevalence of Depression Symptoms among Newly Diagnosed Breast Cancer Patients

The mean total score of the BDI-II questionnaire was 22.34 (SD=9.65). According to the cut-off score of BDI-II between 20 and 28, 46% of patients had symptoms of moderate depression, and the cut-off score of BDI-II was between 29 and 63, 31% of patients had symptoms of severe depression. Total scores of the BDI-II questionnaire are presented in Table 2.

Factors Associated with Depression

Fifteen sociodemographic and clinical characteristics of newly diagnosed breast cancer patients were analyzed in logistic regression to find their association with
Depression in Breast Cancer Patients

Univariate analysis showed that the factors associated with moderate and severe depression symptoms were social status, number of children, schooling, place of residence, household monthly income rate, alcohol use, smoking, social support, reliability of social support, clinical diagnosis, histopathological diagnosis, and stage. Those factors were included in the stepwise logistic regression model – the backward LR method. This analysis identified social status, monthly income level, reliability of social support, and stage as significant predictors of moderate and severe depression symptoms risk. Unemployed or retired patients had a significantly higher risk of developing moderate or severe depression symptoms than those who were employed. Those patients whose household monthly income was the highest had almost two times (OR -1.55 (95% CI: -0.49, -2.61)) fewer odds of experiencing moderate and severe depression symptoms. Univariate analysis showed that the factors associated with moderate and severe depression symptoms were social status, number of children, schooling, place of residence, household monthly income rate, alcohol use, smoking, social support, reliability of social support, clinical diagnosis, histopathological diagnosis, and stage. Those factors were included in the stepwise logistic regression model – the backward LR method. This analysis identified social status, monthly income level, reliability of social support, and stage as significant predictors of moderate and severe depression symptoms risk. Unemployed or retired patients had a significantly higher risk of developing moderate or severe depression symptoms than those who were employed. Those patients whose household monthly income was the highest had almost two times (OR -1.55 (95% CI: -0.49, -2.61)) fewer odds of experiencing moderate and severe depression symptoms.

Table 1. Characteristics of the Study Participants (n=162)

| Variable                  | n (%) |
|---------------------------|-------|
| Age (years)               |       |
| < 40                      | 5 (3%) |
| 40-49                     | 34 (21%) |
| 50-59                     | 76 (47%) |
| 60-69                     | 41 (25%) |
| ≥ 70                      | 6 (4%)  |
| mean ±SD                  | 54.41 ±8.1 |
| Marital status            |       |
| Married                   | 84 (52%) |
| Divorced                  | 43 (27%) |
| Single                    | 10 (6%)  |
| Widowed                   | 21 (13%) |
| Cohabitate                | 4 (2%)  |
| Social status             |       |
| Employed                  | 66 (41%) |
| Retired                   | 50 (31%) |
| Self Employed             | 16 (10%) |
| Unemployed                | 30 (18%) |
| Number of children        |       |
| 0                         | 14 (9%)  |
| 1 – 2                     | 92 (57%) |
| 3 – 4                     | 54 (33%) |
| ≥5                        | 2 (1%)   |
| Schooling                 |       |
| High school               | 23 (14%) |
| Technical / Special degree without bachelor's degree | 47 (29%) |
| Bachelor’s degree         | 63 (39%) |
| Not completed bachelor’s degree | 12 (7%)  |
| Master’s degree           | 6 (4%)  |
| Doctorate degree or equivalent | 11 (7%)  |
| Residence                 |       |
| Rural                     | 19 (12%) |
| Suburban                  | 56 (34%) |
| Urban                     | 87 (54%) |
| Monthly income level (kzt) |       |
| less than 116 126         | 24 (15%) |
| 116 126 – 232 252         | 92 (57%) |
| 232 252 – 348 378         | 32 (20%) |
| 348 378 and higher        | 14 (8%)  |
| Alcohol use               |       |
| Never                     | 67 (41%) |
| Once in a while           | 60 (37%) |
| Several times a months    | 19 (12%) |
| Several times a week      | 16 (10%) |
| Smoking                   |       |
| Do not smoke              | 108 (67%) |
| Electronic cigarettes     | 22 (13%) |
| Regular cigarettes        | 32 (20%) |

Table 1. Continued

| Variable                  | n (%) |
|---------------------------|-------|
| Physical activity         |       |
| Never                     | 88 (54%) |
| Once in a while           | 51 (32%) |
| Several times a months    | 19 (12%) |
| Several times a week      | 4 (2%)  |
| Social support            |       |
| Yes                       | 148 (91%) |
| No                        | 14 (9%)  |
| Reliability               |       |
| Yes                       | 43 (27%) |
| No                        | 119 (73%) |
| Clinical diagnosis        |       |
| Unilateral breast cancer  | 154 (95%) |
| Bilateral breast cancer   | 8 (5%)  |
| Histopathological diagnosis |       |
| Invasive ductal carcinoma | 137 (85%) |
| Invasive lobular carcinoma| 6 (4%)  |
| Invasive lobular duct     | 8 (5%)  |
| Low differentiated adenocarcinoma | 4 (2%) |
| No diagnosis in medical records | 7 (4%) |
| Stage                     |       |
| I or II                   | 128 (79%) |
| III                       | 23 (14%) |
| IV                        | 11 (7%)  |

Table 2. Prevalence of Depression Symptoms in Breast Cancer Patients (n=162)

| Depression symptom's severity (BDI-II scoring) | n (%) |
|------------------------------------------------|-------|
| Minimal (0 – 13)                                | 23 (14%) |
| Mild (14 – 19)                                  | 14 (9%)  |
| Moderate (20 – 28)                              | 74 (46%) |
| Severe (29 – 63)                                | 51 (31%) |
| mean±SD                                        | 22.34±9.65 |

BDI-II, Beck Depression Inventory – II; SD, standard deviation
| Variable                  | Presence of Depression n (%) | Absence of Depression n (%) | COR (St.Er) | AOR (St.Er) |
|--------------------------|-----------------------------|----------------------------|-------------|-------------|
| **Age (years)**          |                             |                            |             |             |
| < 40                     | 4 (80%)                     | 1 (20%)                    | 1.39 (1.12) |             |
| 40-49                    | 20 (58.8%)                  | 14 (41.2%)                 | -1.03 (1.17) |             |
| 50-59                    | 62 (81.6%)                  | 14 (18.4%)                 | Reference   |             |
| 60-69                    | 33 (80.5%)                  | 8 (19.5%)                  | 0.03 (1.18) |             |
| ≥ 70                     | 6 (100%)                    | 0                          | 15.2 (979.61) |             |
| **Marital status**       |                             |                            |             |             |
| Single                   | 10 (100%)                   | 0                          | 0.74 (2.23) |             |
| Married                  | 57 (67.9%)                  | 27 (32.1%)                 | Reference   |             |
| Divorced                 | 37 (86.0%)                  | 6 (14.0%)                  | 16.82 (1251.05) |     |
| Widowed                  | 17 (80.9%)                  | 4 (19.1%)                  | 0.70 (0.60) |             |
| Cohabitate               | 4 (100%)                    | 0                          | 16.82 (1978.09) |     |
| **Social status**        |                             |                            |             |             |
| Employed                 | 45 (68.2%)                  | 21 (31.8%)                 | Reference   | Reference   |
| Retired                  | 42 (84.0%)                  | 8 (16.0%)                  | 0.9 (0.47)* | 2.62 (0.94)** |
| Self Employed            | 13 (81.3%)                  | 3 (18.7%)                  | 0.7 (0.69)  | 1.13 (0.99) |
| Unemployed               | 25 (83.3%)                  | 5 (16.7%)                  | 0.84 (0.47) | 2.68 (1.07)* |
| **Number of children**   |                             |                            |             |             |
| 0                        | 13 (92.9%)                  | 1 (7.1%)                   | 1.46 (1.06)* |             |
| 1 – 2                    | 69 (75.0%)                  | 23 (25.0%)                 | Reference   |             |
| 3 – 4                    | 41 (75.9%)                  | 13 (24.1%)                 | 5.00 (3.99) |             |
| ≥5                       | 2 (100%)                    | 0                          | 1.45 (1.02) |             |
| **Schooling**            |                             |                            |             |             |
| High school              | 21 (91.3%)                  | 2 (8.7%)                   | 2.35 (0.74)* |             |
| Technical / Special degree without bachelor's degree | | | | |
| Bachelor’s degree        | 41 (65.1%)                  | 22 (34.9%)                 | Reference   |             |
| Not completed bachelor’s degree | 9 (75.0%) | 3 (25.0%) | 0.48 (0.72) |             |
| Master’s degree          | 5 (83.3%)                   | 1 (16.7%)                  | 0.99 (1.13) |             |
| Doctorate degree or equivalent | 8 (72.3%) | 3 (27.3%) | 0.36 (0.73) |             |
| **Place of residence**   |                             |                            |             |             |
| Urban                    | 66 (75.9%)                  | 21 (24.1%)                 | Reference   |             |
| Suburban                 | 47 (83.9%)                  | 9 (16.1%)                  | 0.51 (0.44) |             |
| Rural                    | 12 (63.2%)                  | 7 (36.8%)                  | -0.61 (0.54) |             |
| **Monthly income level (kzt)** | | | | |
| less than 116 126        | 23 (95.8%)                  | 1 (4.2%)                   | 1.91 (1.05) | 2.08 (1.57) |
| 116 126 – 232 252        | 71 (77.2%)                  | 21 (22.8%)                 | Reference   | Reference   |
| 232 252 – 348 378        | 26 (81.3%)                  | 6 (18.7%)                  | 0.25 (0.52) | 1.26 (0.74) |
| 348 378 and higher       | 5 (35.7%)                   | 9 (64.3%)                  | -1.80 (0.61)** | -1.55 (1.06)* |
| **Alcohol use**          |                             |                            |             |             |
| Never                    | 49 (73.1%)                  | 18 (26.9%)                 | Reference   |             |
| Once in a while          | 49 (81.7%)                  | 11 (18.3%)                 | -1.27 (1.07) |             |
| Several times a months   | 12 (63.2%)                  | 7 (36.8%)                  | -2.17 (1.14) |             |
| Several times a week     | 15 (93.7%)                  | 1 (6.3%)                   | 2.71 (1.03)** |             |
| **Smoking**              |                             |                            |             |             |
| Do not smoke             | 89 (82.4%)                  | 19 (17.6%)                 | Reference   |             |
| Electronic cigarettes    | 13 (59.1%)                  | 9 (40.9%)                  | -0.46 (0.50) |             |
| Regular cigarettes       | 23 (71.9%)                  | 9 (28.1%)                  | 1.03 (0.28)*** |             |
Table 3. Continued

| Variable                        | Presence of Depression n (%) | Absence of Depression n (%) | COR (St.Er) | AOR (St.Er) |
|---------------------------------|------------------------------|-----------------------------|-------------|-------------|
| **Physical activity**           |                              |                             |             |             |
| Never                           | 70 (79.5%)                   | 18 (20.5%)                  | Reference   |             |
| Once in a while                 | 38 (74.5%)                   | 13 (25.5%)                  | 1.07 (1.05) |             |
| Several times a months          | 15 (78.9%)                   | 4 (21.1%)                   | 1.32 (1.14) |             |
| Several times a week            | 2 (50%)                      | 2 (50%)                     | 1.51 (1.03) |             |
| **Social support**              |                              |                             |             |             |
| Yes                             | 112 (75.7%)                  | 36 (24.3%)                  | Reference   |             |
| No                              | 13 (92.9%)                   | 1 (7.1%)                    | 1.43 (1.06) |             |
| **Reliability of social support** |                             |                             |             |             |
| Yes                             | 16 (37.2%)                   | 27 (62.8%)                  | -2.91 (0.46)** | -4.18 (0.86)** |
| No                              | 109 (91.6%)                  | 10 (8.4%)                   | Reference   | Reference   |
| **Clinical diagnosis**          |                              |                             |             |             |
| Unilateral breast cancer        | 117 (76.0%)                  | 37 (24.0%)                  | Reference   |             |
| Bilateral breast cancer         | 8 (100%)                     | 0                           | 16.41 (1398.7) |             |
| **Histopathological diagnosis** |                              |                             |             |             |
| Invasive ductal carcinoma       | 108 (78.8%)                  | 29 (21.2%)                  | Reference   |             |
| Invasive lobular carcinoma      | 3 (50.0%)                    | 3 (50.0%)                   | -1.31 (0.84) |             |
| Invasive lobular duct           | 5 (62.5%)                    | 3 (37.5%)                   | -0.80 (0.76) |             |
| Low differentiated adenocarcinoma | 4 (100%)                     | 0                           | 15.25 (1199.7) |             |
| No diagnosis in medical records | 5 (71.4%)                    | 2 (28.6%)                   | -0.39 (0.86) |             |
| **Stage**                       |                              |                             |             |             |
| I or II                         | 92 (71.9%)                   | 36 (21.2%)                  | Reference   | Reference   |
| III                             | 22 (95.6%)                   | 1 (4.4%)                    | 2.15 (1.04)* | 3.92 (1.67)* |
| IV                              | 11 (100%)                    | 0                           | 16.63 (1192.83) | 18.08 (1625.02) |

*, p<0.05; **, p<0.01; ***, p<0.001; COR, Crude Odds Ratio; AOR, Adjusted Odds Ratio; Hosmer-Lemeshow test, p=0.917, Adjusted Nagelkerke R² = 58.7%, Overall Predictive Ability = 77.2%

depression symptoms than those whose household’s income level was 116 126 – 232 252 kzt monthly. Newly diagnosed breast cancer patients who had reliable social support had four times (OR -4.18 (95% CI: -3.32, -5.04)) lower risk of developing moderate and severe depression symptoms than those whose social support was not reliable. Not surprisingly, patients with stage III cancer had a significantly higher risk for moderate or severe psychiatric disorder symptoms presence. The final model seems to explain 58.7% of the variation in depression symptoms and it can properly classify 77.2% of breast cancer patients. The fit of the multivariate model was flawless (p=0.917). The results of univariate and multivariate logistic analyses are presented in Table 3.

**Discussion**

Study objectives were to determine the prevalence and associated factors of depression symptoms among newly diagnosed breast cancer patients to identify independent predictors of depression risk. According to our results, 77.2% of patients had moderate or severe depression symptoms based on the BDI-II. Social status, reliability of social support, and stage of breast cancer were significant predictors of moderate and severe depression symptoms. There was only one predictor adversely associated with depression symptoms: high household income.

The prevalence of depression symptoms in newly diagnosed breast cancer patients was higher than in previous studies on depression in this population (Tsaras et al., 2018; Purkayastha et al., 2017; Chen et al., 2009). One explanation may be the different methods used in the studies. Alternatively, it may be because we did not focus on clinical depression diagnosis, but rather screened patients for depressive symptoms.

In our study, social status was significantly associated with moderate and severe depression symptoms. Unemployed women were almost three times more likely than employed patients to experience moderate or severe depression symptoms. The number of retired patients with depression symptoms was also twice as high as that of employed women. According to previous research, breast cancer patients who are unemployed or retired are more likely to experience depression, anxiety and fatigue more often than employed patients (Lindbohm et al., 2014).

The higher-income level was associated with fewer depression symptoms. 15% of study participants had a household monthly income below the nominal average income per person rate in 2020. In contrast, only 8% of the participants had a household monthly income three times and above the nominal average income per person rate in 2020. Patients who were in the highest income group...
were less likely to have moderate or severe depression symptoms. This was compared to the lower income group. Our findings are in line with previous studies on income level and depression prevalence among breast cancer patients. Having a lower household income is one of the independent predictors for clinical depression among breast cancer patients (Chen et al., 2009). The lower level of household income was associated with lifetime mental disorders and suicidal attempts among patients with posttraumatic stress disorder (Sareen et al., 2007).

The results of our study show that the majority of patients have access to social support. However, the lack of reliability of the support person or persons was significantly associated with moderate or severe levels of depression symptoms. One of the explanations for the high numbers in the availability of social support is the fact that 91% of our study participants had children. In addition, 54% of participants were married or had a partner. Nevertheless, newly diagnosed breast cancer patients were four times less likely to experience moderate or severe depression symptoms when they could rely on their social support. A prospective cohort study also showed that perceived social support was positively associated with a better quality of life and lower psychological distress (Ng et al., 2015).

Most of the patients included in our study were stage I or stage II patients. The breast cancer screening program plays a huge role in the early diagnosis of breast cancer. A study on the screening program in Kazakhstan from 2009 to 2018 found that the incidence rate of breast cancer increased from 39.5 per 100,000 population of females in 2009 to 49.6 in 2018 due to this screening program implementation (Toguzbayeva et al., 2021). The association between the stage of breast cancer and the prevalence of depression was assessed in a recent meta-analysis, where the findings show that the prevalence of depression among advanced breast cancer patients varied from 17.9% to 60.9%, and according to the random-effects model was equal to 38.2% (95% CI [30.9, 45.8]) (Karibayeva et al., 2020). Another meta-analysis showed that the prevalence of depression among the broader population of breast cancer patients (stage I to IV) was lower at 32.2% (95% CI [28.9, 35.4]) (Pilevarzadeh et al. 2019). According to our study, the advanced stage of breast cancer (stage III) was significantly associated with moderate and severe depression symptoms when compared to patients in stage I or stage II.

In conclusion, the prevalence of moderate and severe depression symptoms among newly diagnosed breast cancer patients was high. The World Health Organization conducted the World Health Survey in 2002-2003, which reported that income levels of countries played a major role in access to depression care (Araya et al. 2018). The authors of this article think this is still true today in Kazakhstan. By early detection and timely referral, depression can be effectively managed and the quality of life and overall survival of breast cancer patients can be improved.

**Author Contribution Statement**

Indira Karibayeva: Conceptualization, Methodology, Investigation, Formal Analysis, Writing – Original / draft preparation. Botagoz Turdaliyeva: Resources, Software, Data curation, Supervision. Nor Zuraida Zainal: Validation, Writing - Review and Editing. Fatima Bagiyarova: Supervision, Project Administration: Dinara Kusainova: Investigation.

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**Ethical Declaration**

The Ethics Committee of the Kazakh Medical University of Continuing Education approved this study (Study ID: 06-2020).

**Availability of data**

According to the patient consent form data is not available for scientific use by others than the project group members.

**Study Registration**

The study protocol is registered with the ClinicalTrials.gov Protocol Registration and Results System (Reference: NCT05011409).

**Conflict of Interest**

The authors declare no conflict of interest regarding this article.

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