

Examination of Behavioural Patterns of Psychological Distress and Evaluation of Related Factors

A latent class regression

Negar Sangsefidi,¹ *Jamshid Jamali,¹ Zahra Rahimi,¹ Ana Kazemi²

ABSTRACT: Objectives: This study aimed to identify the behavioural pattern of psychological distress (PD) in the population of 18 to 65 years old people in Mashhad, Iran, using latent class regression and evaluate the related factors. PD is a unique emotional state with suffering in response to a stressor or specific need that leads to temporary or permanent impacts. Due to its negative effects on several features of life like the quality of life, health, performance and productivity of individuals, PD and its consequences are considered a public health priority. **Methods:** A cross-sectional study was performed on 425,286 individuals aged 18 to 65, who were referred to health centres in Mashhad, northeastern Iran in the first half of 2018. The information required for this study, including a checklist of demographic information and the six-item Kessler Psychological Distress Scale (K-6), was obtained from the Sina System. **Results:** Latent class regression identified three latent patterns of PD in answering the questions of the K-6 questionnaire, including severe PD (14%), low PD distress (40%) and no PD (46%). Statistical variables of this study due to the results are considered as the following: women, illiterate people, unemployed and divorced people, individuals aged between 50 and 59 years and people with low weight were more likely to be in the severe PD class than in the no PD class. **Conclusion:** Although a small percentage of people were classified as severely disturbed, the findings showed a high rate of symptoms of distress and sadness even in the no PD class.

Keywords: Cross-Sectional Study; Psychological Distress; Latent Class Analyses; Iran.

ADVANCES IN KNOWLEDGE

- Individuals who are women, illiterate, unemployed, divorced and individuals aged between 50 and 59 years as well as people with low weight were more likely to be in the severe PD class than no PD class.

APPLICATIONS TO PATIENT CARE

- There is a high rate of symptoms of significant distress and sadness even in the no-PD class.
- There is a need to develop appropriate strategies for prevention and treatment and provide the necessary training and intervention for high-risk groups of PD, especially women.
- Using the achieved results through careful planning, diagnosis, treatment and prevention of mental disease can lead to building a healthy and vibrant society away from mental and psychosomatic illnesses.

TENSIONS, STRESSES AND LIFE PROBLEMS ARE common phenomena of modern life, but ineffective management of these challenges can lead to stress disorders, psychological distress (PD) and physical ailments. According to numerous epidemiological studies in recent years, the prevalence of mental disorders in different countries is increasing daily. The prevalence of these disorders in different countries varies from 13% to 22%.¹ These disorders are one of the five leading causes of disability and are known as a strong predictor of death from heart disease, stroke and cancer.¹ It is estimated that 12% of the total burden of disease globally is due to mental disorders and is expected to increase to 15% by 2020.² The prevalence of these disorders in Iran is estimated between 11.9% to 23.8%.^{3,4}

PD is considered as a state of emotional suffering consisting of symptoms related to depression and anxiety, which lead to a decline in the quality of life at the individual level.⁵ Because of their adverse effects on health, performance and productivity, PD is proposed to be recognised as a public health priority.¹ It is important to mention that some symptoms of PD include a wide range of physical to mental states. Sleep disturbance, anorexia, chronic pain, fatigue, lack of menstruation in women and headaches are some of the physical symptoms while feelings of sadness, nervousness, helplessness, hopelessness and worthlessness are mental symptoms. The prevalence of mild mental disorders (depression and anxiety) among general populations in different countries varies between 7.3% to 52.5%.⁶ According to DSM-

¹Department of Biostatistics, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran; ²Department of Psychology, Faculty of Psychology and Educational Sciences, Kerman Branch, Islamic Azad University, Kerman, Iran

*Corresponding Author's e-mail: jamalij@mums.ac.ir

5-TR, high levels of PD are considered one of the negative functional consequences of specific learning disorders.⁷

According to the results of the Global Burden of Disease Study (GBD) in 2016, depressive and anxiety disorders from 2005 to 2016 were among the top ten causes of the loss of life among Iranians due to disability.⁸ The study estimated the number of people with mental illnesses and drug-related disorders in 2016 at 1.1 billion worldwide.⁸ The term PD refers to a group of mental symptoms that are used as indicators of mental health issues in demographic and epidemiological studies.⁹

PD and its measurements strongly refer to the symptoms of depression and anxiety and mainly cognitive behavioural disorders, depressive disorders and anxiety disorders. Hence, reports indicate that PD affected most of these disorders.¹⁰ As mentioned, PD is commonly referred to as emotional suffering characterised by symptoms of depression such as apathy, sadness, hopelessness and anxiety (restlessness and feeling tense).⁹ In other words, PD is used to describe a short but acute period of specific mental symptoms that first present with features of depression or anxiety and can be deemed as a type of abnormality that is responsible for maladaptive cognitive behaviour and thought, which requires specialised intervention.¹¹ PD encompasses a much wider range of experiences than mental illness, ranging from mild symptoms to severe psychiatric disease.¹² In these cases, it is noticeable that life enthusiasm notably decreases and a feeling of heartbreak and despair becomes dominant throughout an individual's life.¹¹ Hence, severe PD is a predictor of serious mental illnesses like depression and anxiety and other disorders.²

Based on the findings of previous studies, the prevalence of PD in India was estimated at 20.2%, in Japan at 6.7%, in the United States at 3.4%, in Canada at 12% and in Australia at 11.1%.^{2,13-15}

The prevalence of PD in Iran is reported to be very diverse, from 10.1% to 57.2%, depending on the questionnaire used, the cut-off point considered, the demographic characteristics and the time of the study.¹⁶⁻²⁰

Studies in different parts of Iran also show that the prevalence of PD is less than the recorded statistics of other countries but not less than the reports of the World Health Organization and the studies by Noorbala *et al.* in Mashhad and Sharif *et al.* in Isfahan, both in Iran.^{21,22}

Three categories of factors include socio-demographic characteristics (e.g. gender, age and ethnicity), Factors related to stress (e.g. living conditions and life events) and personal resources

(e.g. income, education, social network and social support) are recognised as influential factors of PD in the general population.^{2,9,23-25}

Recent studies conducted in different parts of the world show a high prevalence of PD due to the increasing rate of mental disorders such as anxiety and depression. Such a trend has created the need for appropriate healthcare and services to provide mental health services in health centres, especially for high-risk groups of mental disorders. For this purpose, epidemiological studies of PD play an important role in determining the general mental health status of the community, identifying related demographic factors and estimating the resources needed to provide better health services in the country. Healthcare centres can also play a critical role in different processes such as diagnosis, care and treatment of individuals belonging to high-risk mental disorder groups. There are several fields of studies such as the patterns of PD and the evaluation of related factors simultaneously in a large-scale study, which have been less studied, especially in Iran. Therefore, this study aimed to examine the pattern of PD in patients aged 18 to 65 years in Mashhad health centres based on the K-6 questionnaire. The research identifies related factors, offers appropriate suggestions and programmes in order to provide better mental health services for people prone to psychological disorders and also helps the relevant authorities.

Methods

The present study was cross-sectional and comprised descriptive-analytical research performed in Mashhad. Mashhad is the second-most-populous city in Iran and the capital of Razavi Khorasan Province, which is located in the northeast part of the country. The information used in this study was extracted from the Sina Electronic Health Record System (Sina EHR) database under the supervision of Mashhad University of Medical Sciences. The Sina system has been used since 2016 to electronically record the health records of patients who were referred to health centres in the Khorasan Razavi province and so far covers about 40% of the population of Mashhad. This system includes demographic information, health records of each individual, reports of physicians and healthcare providers, laboratory results, screening forms and age group care and other details of clients' files. One of the screening forms used in this system is the K-6 questionnaire. In this study, information was received on people aged 18-65 years who were referred to Mashhad health centres for the first time in the first half of 2018 and completed the K-6 questionnaire.

The inclusion criterion in this study was that answers needed to be provided for at least 50% of the questions in the questionnaire (three questions). People who had a diagnosis of neurological problems in the past were excluded from the study. Data after correction and purification included 425,286 people.

This survey comprised two instruments to gather data—standard demographic questions including gender, age, marital status, level of education, job type, place of residence, body mass index and K-6 to measure the participants' PD. The K-6 scale is a population-based screening tool for identifying PD and is widely used in general populations.^{23,26–28} This scale is a truncated version of six items from the K-10 scale that was introduced in 2002 by Kessler *et al.*⁸ Responses were scored on a five-point Likert scale reflecting how much over the past month respondents had experienced the six symptoms (sadness, restlessness, nervousness, helplessness, hopelessness and worthlessness). The measurement has five response categories ranging from zero (none of the time) to four (all of the time). The items were summed to generate a total score ranging from 0 to 24, with higher scores indicating higher levels of PD.¹⁰ The validity and reliability of its Persian version have also been confirmed in previous studies.^{10,18,29}

Latent class regression (LCR), a model-based clustering approach, was used to classify each participant into a latent class whose members report similar patterns of responses to the K-6 questionnaire. Determining the cut-off point for the PD questionnaire is challenging, and several cut-off points have been proposed so far.^{9,15,23} In LCR, there is no need for a cut-off point that is a function of the demographic characteristics of communities.

LCR can also assess the effect of covariates on the classification.^{30,31} Huang and Bandeen-Roche suggested that a generalisation of LCR can evaluate the effect of covariates on latent variables as well as the observed variables.³² Interpretation of coefficients in LCR is similar to logistic regression based on odds ratio. Determining the optimal number of latent classes in LCR is challenging.^{33,34} Statistical criteria (such as Akaike Information Criterion, Bayesian Information Criterion, likelihood-based tests, log-likelihood difference test, Lo-Mendell-Rubin Test, bootstrap likelihood ratio test and entropy) and interpretability are commonly used to determine the number of classes.³³

Models with lower evaluation criteria (AIC, BIC, AIC3 and CAIC) are preferred to those with higher values for these criteria. Other fit statistics such as likelihood tests (i.e. tests log-likelihood difference

Table 1: Characteristics of the subjects included in this study (N = 425,286)

Characteristic	n (%)
Gender	
Male	116,056 (27.3)
Female	309,230 (72.7)
Age in years	
18–29	113,149 (26.6)
30–39	182,226 (42.8)
40–49	82,418 (19.4)
50–59	42,261 (9.9)
60–65	5,232 (1.2)
Marital status	
Married	385,424 (94.1)
Widow	5,448 (1.3)
Absolute	4,770 (1.2)
Single	14,152 (3.5)
Education level	
Illiterate	34,129 (8.0)
Diploma and sub-diploma	308,337 (72.5)
University	81,642 (19.2)
Seminary	1,084 (0.3)
Job type	
Unemployed	8,737 (2.6)
Government employee	16,261 (4.8)
Freelancer	80,230 (23.8)
Other	231,884 (68.8)
Residence	
Metropolis (non-marginal)	194,859 (45.8)
Suburbs	230,427 (54.2)
Body mass index	
Weight loss	10,735 (2.8)
Normal weight	146,726 (38.3)
Overweight	141,468 (37)
Obesity	83,869 (21.9)

test, Lo-Mendell-Rubin Test, and the bootstrapped likelihood ratio test) provide a *P* value, which indicates if one model is statistically better than another.³⁴ Another set of methods for evaluating LC cluster models is based on the uncertainty of classification or, equivalently, the separation of the clusters. Entropy as a diagnostic statistic, indicates how accurately the

Table 2: Criteria for selecting the optimal number of latent classes

Number of classes	LL	BIC	AIC	AIC3	CAIC	LMR	BLRT	R ²	Entropy
2 Class	-2,368,774	4,737,950	4,737,611	4,737,642	4,737,981	0.00	0.00	0.86	0.84
3 Class	-2,283,160	4,566,812	4,566,396	4,566,434	4,566,850	0.00	0.00	0.79	0.78
4 Class	-2,262,141	4,524,864	4,524,372	4,524,417	4,524,909	0.27	0.00	0.75	0.76
5 Class	-2,249,907	4,500,488	4,499,919	4,499,971	4,500,540	0.00	0.00	0.65	0.69

LL = Log Likelihood; BIC = Bayesian Information Criterion; AIC = Akaike Information Criterion; AIC3 = Akaike Information Criterion 3; CAIC = Consistent Akaike Information Criterion; LMR = Lo-Mendell-Rubin; BLRT = Bootstrap Likelihood Ratio Test

model defines classes. In general, an entropy value close to 1 is ideal and above 0.8 is acceptable.³⁵

In this study, K-6 questions were considered indicator variables, PD was known as a latent variable, and gender, age, marital status, education level, job type, residence and body mass index were covariates in LCR. All analyses were performed using Latent Gold 5. If the *P* value was less than 0.05 (typically ≤ 0.05), the result was considered significant.

Voluntary referral, the confidentiality of identity information, non-disclosure of individuals' names, lack of prejudice, involvement of inclinations in the research results and mentioning of all scientific sources have been among the ethical considerations considered in this research. This study has been approved by the National Committee of Ethics in Biomedical Research with the ethics (IR.MUMS.REC.1398.058).

Results

Out of 425,286 participants, 72.7% were women, 90.6% were married, 72.5% had a diploma and undergraduate education, and 54.2% were suburban residents. The mean age and body mass index (BMI) of the participants were 36.02 ± 9.58 years and 26.5 ± 4.88 , respectively [Table 1].

The mean score of the K-6 questionnaire is 4.23 ± 4.54 . Most people (over 75%) have experienced little or no symptoms of anxiety. However, half of the people have always, sometimes or most of the time been upset and sad. Only 3% of people always or most often suffered from feelings of emptiness and worthlessness. This rate was less than 5% for symptoms of hopelessness and helplessness. It is worth mentioning that the rate of answering the questions of the questionnaire is 98.5%.

To determine the optimal number of latent classes, goodness-of-fit criteria for the LCR model with 2–6 latent classes were fitted to the data [Table 2]. As the number of classes increased, the goodness-of-fit indices decreased, but for models with more than three classes, no significant improvement in index values was observed. The value of entropy and R² in

the latent class model with three classes are 0.78 and 0.79, respectively, which is a statistically significant value for a model and can well explain the latent pattern of the data. This model also can interpret in practice. Considering more than three classes makes it difficult to interpret the data correctly. As a result, the latent class model with three classes is the optimal model for studying the data.

The proportions of individuals in the classes created based on the K-6 question pattern are presented in Table 3.

It can be seen that in the no-PD class, which had the highest volume among the classes, people did not report any PD symptoms during one month. More than 90% of these people have never experienced the symptoms of PD. In the low-PD class, at least 80% of people have never experienced or experienced minor symptoms of nervousness, helplessness, hopelessness, or worthlessness. Nevertheless, this rate was higher for the symptoms of sadness and restlessness. Over a month, more than 60% of people reported these symptoms rarely or occasionally. This class accounts for 39% of the samples. It was estimated that 14% of people suffered from severe PD. Most people in this class sometimes suffered from symptoms of PD. However, most of the time, they felt sadness and restlessness.

The LCR model, in addition to determining the latent classes, also makes it possible to evaluate the effect of independent variables on the placement of individuals in the formed latent classes. In this study, the no PD class is considered a reference category. The numerical value of the coefficients (in terms of odds ratio) expresses the effect of increasing one unit in the independent variable on the placement of individuals in classes of severe and low PD compared to no PD.

Table 4 shows the effect of independent variables on the membership of individuals in PD classes compared to the reference class in the form of regression coefficients.

The findings of Huang's LCR model showed that most of the auxiliary variables have a significant relationship with the patterns of PD.

Table 3: The percentage of people in each class by the answers to question of the PD questionnaire

Questions of the questionnaire	Answers	No PD class	Low PD class	Severe PD class
Question 1: Sadness	Never/Rarely	55.0	15.0	1.0
	Slightly	32.0	30.0	5.0
	Sometimes	12.0	38.0	28.0
	Most of the time	1.0	15.0	45.0
	Always	0.0	2.0	21.0
Question 2: Restless	Never/Rarely	89.0	28.0	1.0
	Slightly	10.0	42.0	11.0
	Sometimes	1.0	25.0	37.0
	Most of the time	0.0	5.0	39.0
	Always	0.0	0.0	12.0
Question 3: Nervous	Never/Rarely	93.0	41.0	1.0
	Slightly	7.0	39.0	12.0
	Sometimes	0.0	18.0	42.0
	Most of the time	0.0	2.0	35.0
	Always	0.0	0.0	1.0
Question 4: Helpless	Never/Rarely	95.0	60.0	14.0
	Slightly	5.0	26.0	22.0
	Sometimes	0.0	12.0	37.0
	Most of the time	0.0	2.0	21.0
	Always	0.0	0.0	6.0
Question 5: Hopeless	Never/Rarely	96.0	58.0	6.0
	Slightly	4.0	31.0	20.0
	Sometimes	0.0	10.0	39.0
	Most of the time	0.0	1.0	27.0
	Always	0.0	0.0	9.0
Question 6: Worthless	Never/Rarely	99.0	77.0	23.0
	Slightly	1.0	18.0	26.0
	Sometimes	0.0	4.0	30.0
	Most of the time	0.0	1.0	15.0
	Always	0.0	0.0	5.0
Total		46.0	40.0	14.0

PD = psychological distress.

Table 4: Results of independent variables regression on PD classes using latent class regression

Variable (reference)		Low PD	Severe PD
		OR (95% CI)	OR (95% CI)
Age	18–29	Reference	
	30–39	1.21* (1.19–1.24)	1.61* (1.57–1.67)
	40–49	1.42* (1.38–1.45)	2.49* (2.40–2.58)
	50–59	1.65* (1.60–1.71)	3.21* (3.08–3.36)
	60–65	1.77* (1.64–1.92)	2.90* (2.62–3.20)
	Gender	Male	Reference
	Female	1.18* (1.14–1.21)	2.85* (2.70–3.00)
Marital status	Married	Reference	
	Widow	1.15* (1.07–1.24)	1.60* (1.43–1.74)
	Divorced	1.40* (1.30–1.51)	2.18* (2.00–2.37)
	Single	0.99 (0.95–1.04)	1.49* (1.40–1.58)
Education level	Illiterate	Reference	
	Diploma and sub-diploma	0.99 (0.95–1.02)	1.00 (0.96–1.05)
	University	0.96 (0.93–1.00)	0.67* (0.64–0.71)
	Seminary	0.85 [†] (0.73–0.99)	0.54* (0.40–0.73)
	Job type	Unemployed	Reference
	Government employee	0.98 (0.92–1.04)	0.59* (0.54–0.66)
	Freelance	1.06 (1.00–1.11)	0.90 [†] (0.83–0.98)
	Other	1.08* (1.02–1.14)	0.96 (0.88–1.04)
Residence	Suburbs	Reference	
	Metropolis	1.06* (1.05–1.08)	1.16* (1.14–1.91)
Body mass index	Obesity	Reference	
	Weight Loss	1.09* (1.04–1.15)	1.38* (1.29–1.48)
	Normal weight	1.00 (0.98–1.02)	0.88* (0.85–0.91)
	Overweight	1.04* (1.02–1.06)	0.92* (0.89–0.95)

PD = psychological distress; OR = odds ratio; CI = confidence interval. *P < 0.01; [†]P < 0.05; Reference category: No PD.

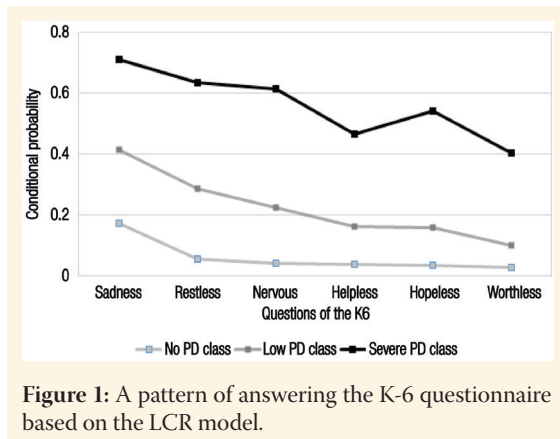


Figure 1: A pattern of answering the K-6 questionnaire based on the LCR model.

The variables that indicate an individual would have a higher chance among other people to be in the class of severe PD are female gender, divorced, illiterate, unemployed, aged 50–59 years and underweight people.

In the LCR model, it is possible to evaluate the effect of independent variables that are influential on the answers to each question of the questionnaire. In general, all independent variables had a significant effect on the answers to the questionnaire.

Discussion

As PD is known as a predictor of some mental issues and disorders, epidemiological studies of PD can play a constructive role in determining the general mental health status of society and identifying the demographic factors related to it in the country. The availability of significant sample size and the use of the LCR model in this study enabled the identification of latent patterns of PD among patients referred to Mashhad health centres and evaluate the factors related to these patterns.

Using LCR, by entering the effect of auxiliary variables, the classification results were improved, and three latent classes or different patterns in answering the questions of the K-6 questionnaire were discovered. The first class consisted of 46% (no PD), the second class 40% (low PD) and the third class 14% (severe PD). People in the severe-PD class consistently reported most of the symptoms; in contrast, people in the no-PD class never experienced these symptoms. A similar study by Barragan *et al.* had similar results and among the four latent identified classes, 2.8% were classified as severely disturbed and 13.6% as moderately disturbed.³⁶ The structure of the formed classes showed that the level of sadness and grief among people, even in the no-PD class, was higher than the other symptoms, which is a matter for consideration and needs further investigation to find the cause.

On the other hand, the feeling of emptiness and

worthlessness in all classes, even among people with severe PD, was the lowest compared to other symptoms. A few of these symptoms may be rooted in the culture and beliefs of the people, religious beliefs and values, relationships and solidarity between families, which despite the high mental pressures among individuals, works as a protective factor, preventing people from developing such feelings.

Women are more prone to PD than men. A previous study in the United States found similar results.³⁶ Compared to women, men were less likely to be in the moderate-anxiety class, feeling mild distress and restlessness than in the non-anxiety class. The 26 factors influencing these results are biological and environmental, gender roles, reduced social participation of women and their greater vulnerability in different life situations. In similar studies, mental distress had a significant relationship with gender and it was more among women than men.^{2–25,37}

In addition, a previous study regarding the quality of life among employees, men were classified better in the quality-of-life class and had less depression and anxiety than women.²⁴

Unlike Barragan's study, in which the age variable was not significant,³⁶ the results of the present study indicate that by increasing age up to 59 years, the chances of being in the class of severe PD increased compared to no PD. However, this rate is lower for the low anxiety class in the age group of 60–65 years compared to the 50–59 age group. The lower prevalence of PD in the elderly compared with the 50–59 age group is probably due to many factors like support and respect of family members and a reduction of their role in education and family finances—in other words, reducing the burden of responsibility. On the other hand, enhancing the prevalence rate considering increasing age can be due to the growing burden related to raising children, biological changes related to adulthood, and also can be the result of social responsibility increment. In a similar study, PD had a significant relationship with age.² In addition, a study in Japan showed that until 2016, the highest questionnaire score was among women aged 25–29 years and then those aged 30–34 years.²³

According to DSM-5-TR, PD due to the different levels of life's traumatic events and their contexts have diverse symptoms and forms.⁴ Compared to married women, women who are single, widowed or divorced are more likely to be in the low-PD or severe PD classes. Divorced people have the highest chance of being in these PD classes. The results of Barragan's study also showed that married people are less likely to be in high, moderate, or mild distress and restlessness classes.³⁶ Another study also showed a significant

relationship between PD and marital status.² Since most of the widows and divorced people in the present study are women, the reason for the above results can be bitter experiences in their lives—enduring the pressure and responsibility of living alone, economic pressures, child care and family management. On the other hand, for single individuals, some concerns may increase the likelihood of PD such as their concerns about marriage and choosing a spouse and also their concerns about future life.

Findings showed that with increasing levels of education, the probability of severe and low PD decreased. The results from similar studies were also consistent with the results from the current study.^{2,36} Probably the reason for the high chance of illiterate people being in the class of severe and low PD can be attributed to the inability and ignorance of these people in using appropriate methods of coping with stress as well as social and cultural constraints. It is also noticeable that the reason for the decrease in this value in people is their greater ability to access information, communicate and understand the existing situations more correctly, observe the principles of mental health, timely prevention and necessary treatment and finally, use appropriate methods to deal with stress. Fewer chances of people with a seminary education being in PD classes may indicate that spirituality is involved in controlling emotions, and this can play a beneficial role in preventing and treating mental illness and developing treatment plans for authorities.

Employees were less likely than unemployed people to report severe PD. This amount decreased more among government employees compared to self-employed ones. In a previous study, employees had a lower chance of getting into high and moderate PD than the unemployed individuals.³⁶ Lack of income, fewer social relationships, the monotony of daily life and the lack of influential positions in society are probably the reasons for the high occurrence of PD among unemployed individuals. In addition, fixed incomes, insurance, pensions and employment facilities enjoyed by governmental employees can be some of the reasons why they are less likely to suffer from severe PD.

In this study, the residents of metropolitan cities were more likely to have severe PD than those living in the suburbs.²⁵ This can be due to many factors like the existence of more stresses in the urban society, increasing cost of living, environmental pollution, reduction of deep human relationships, and decreasing social trust in the residents of big cities.

People with normal weight are less likely to be in the class of severe and low PD, while underweight people are more likely to have severe and low PD. This

result may be related to the reported severe symptoms of hopelessness in these people compared to others. Feelings of hopelessness may also make them lose weight. However, the present study does not allow an accurate assessment of the cause of this problem and further investigation is needed.

Examination of the coefficients of the effective variables on the symptoms of PD or the questions of the K-6 questionnaire showed that some variables, as well as being effective on the classification method, also had a significant effect on the observed variables. In this study, women reported more PD than men. Ageing is also associated with an increase in all symptoms except hopelessness. By increasing age, disappointment will decrease and at younger ages, the feeling of hopelessness is greater than with older ages. Married people experienced less distressing symptoms than single individuals.

As mentioned, among the structure of the formed classes, the amount of sadness and grief in all classes is more than other symptoms. Assessing the effect of auxiliary variables on the answer to the question related to the feeling of sadness and grief also indicates that women, divorced people, those aged 40–49 years and those with diplomas and undergraduate education are more likely to experience the feeling of sadness and grief. After being exposed to a traumatic or stressful event, PD is sometimes highlighted as anxiety or fear and, in some cases, sadness.⁷

An increase in the level of sadness and grief among this group of people, especially in the age group of 40–49 years, who are active in the community and play the greatest roles in its progress and development, can hinder the progress and dynamism of a society. Even if most of the people studied in this age group are housewives, this is important because of the special role of women in the home and family environment and their impact on their spouses and the education of future generations of society.

In this study, an attempt was made to remove some of the limitations of previous studies, but this study also has some limitations. This research studies people who were referred to health centres for voluntary and optional action. Some people with mental problems may not go to these centres. Consequently, this underestimates the prevalence of the general public in this study. In addition, healthcare workers in health centres complete the electronic filings of individuals, especially the K-6 questionnaire. There is a possibility that these individuals may not be honest in answering the questionnaire. If the individuals themselves had completed the questionnaire, they would have been more honest with their answers. On the other hand, most of the women who went to the health centres

were pregnant women or mothers who came to vaccinate their children, and there was also a small percentage of single women in the database. Naturally, due to the high sample size, one of the limitations of this study is the significance of all demographic variables in fitting the regression model, which tried to solve this problem by reporting the effect size.

Conclusion

According to the findings of this study, women compared to men and divorced people compared to married people were more likely to experience severe symptoms of PD. Considering that women are the foundation of the family and the mother of the future generation of the country, they need special attention and care. It is suggested that, in addition to further research on the cause and its clarification, the concept of good mental health in the family be provided through public education through mass media and schools. Health centres can also increase their effectiveness by continuing existing activities, focusing on these high-risk groups and designing targeted interventions for them. Given that cultural and social conditions can be effective in controlling and managing emotions and stress, a similar plan can be implemented in other provinces and throughout Iran. In the present study, it was observed that people in all classes of PD reported feelings of sadness and grief more than other symptoms. It is suggested that in future studies, this issue is seriously addressed and the causes of this issue are investigated.

AUTHORS' CONTRIBUTION

JJ conceptualised, designed and supervised this study. NS and SR cleaned and analysed the data and interpreted the results. AK contributed to the interpretation of the results. All authors contributed to the manuscript writing. All authors approved the final version of the manuscript.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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