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Trends in the prevalence and incidence of anxiety and depressive symptoms in Iran: findings from KERCADRS

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ABSTRACT

Objectives Anxiety and depression (A&D) are common mental disorders with high economical and health burdens. This study aimed to investigate the prevalence and the incidence rate of A&D symptoms and their relationship with sociodemographic and other risk factors and comorbidities in adults living in southeastern Iran.

Design A population-based cohort study with random cluster household survey sampling method.

Setting Second round of Kerman Coronary Artery Disease Risk Factors Study (KERCADRS) (2014–2018) performed in Southeastern, Iran.

Participants We recruited 9997 participants (15–80 years) in the second round of the study, from whom 2820 persons were the people who also participated in the first round of KERCADRS in 2009–2012. The age-standardised A&D prevalence was measured among all participants, and the 5-year A&D incidence rate was measured in those who were free from A&D in the first round in 2009–2012 and were at risk of A&D in the follow-up. The relationship between A&D and demographic characteristics, smoking, opium use, obesity and physical activity was assessed by logistic regression models.

Results Overall, the prevalence of anxiety (48.1% to 16.4%, p<0.001) and depression (5.9% to 1.3%, p<0.001) decreased between the two rounds. The highest prevalence of anxiety was among widowed (31.4%), unemployed (21.3%), obese (19.4%), and opium users (17.4%). Young adults, women, those divorced or widowed, and those with obesity and low physical activity had a higher chance of developing anxiety. The 5-year incidence rate (person/1000 person-years) was 15.0 for anxiety and 3.9 for depression.

Conclusion Despite the overall decrease in the prevalence of A&D symptoms in last 5 years in the area, young adults, women, unemployed, opium users, people with low physical activity and those with obesity had a higher chance of developing anxiety and are in need of more targeted interventions.

Key points

Question

- Anxiety and depression (A&D) are common mental disorders which dramatically affect the quality of life and productivity leading to high economical and health burdens.

Finding

- The prevalence of A&D was 16.4% and 1.3%, respectively, among the studied population, which was significantly less prevalent compared with the results of the first round of the study 5 years earlier. Although the prevalence was significantly more in women, both genders and almost all age groups experienced the timely improvement in A&D symptoms.

Meaning

- Despite the overall decrease in the prevalence of A&D symptoms in the last 5 years in the area, young adults, women, unemployed, opium users, people with low physical activity and those with obesity had a higher chance of developing anxiety. The primary care/family practice system should have strategies for more targeted interventions to change the unhealthy lifestyles and to reduce future healthcare costs.

INTRODUCTION

Anxiety and depressive disorders are common and very costly complications, which can dramatically affect the quality of life and productivity in any society.[1] According to the Global Burden of Disease 2013 study, major depression ranks second and anxiety disorders rank ninth among all non-communicable diseases.[2] These disorders have been associated with medical problems such as substance abuse, type 2 diabetes mellitus and coronary artery disease (CAD) mortality and morbidity.[3–5]

Unlike some cardiovascular risk factors which have mostly genetic basis and are not easily modifiable (eg, hypertension, hyperlipidaemia), anxiety and depressive disorders could be decreased and removed by a proper planning, change of attitude and behaviour. Based on a recent systematic review in Iran (2016), the prevalence of anxiety was reported to be 42% (36% in women and 27% in men), and the prevalence of depression was 44%.[6] The prevalence of depression has been reported to vary from 6% to 73% in different populations.[7]

Some epidemiological studies have shown that in recent years, the trend of mental disorders has been increasing,[8] and some have shown stability in their trend.[9] An epidemiological study in Japan showed a varied pattern in the prevalence of depression and psychological disorders across the country.[1] Due to the differences in demographic characteristics or in mental health outcomes, inconsistency may be observed in trends in the same country and in similar regions.

In Iran, little is known regarding the temporal patterns of psychological disorders in different regions. With a population of 3 164 718 (in 2016), Kerman province constitutes 3.97% of Iran's population.[10] According to the data from phase I of Kerman Coronary Artery Disease Risk Factors Study (KERCADRS) (2009–2012), the prevalence of anxiety and depressive symptoms was found to be 48.1% (38.1% men and 58.6% women) and 5.9% (4.2% men and 7.6% women), respectively.[11] The present study is the second phase of the KERCADRS performed on a larger sample size of 9996 participants to determine the prevalence and predictors of anxiety and depression (A&D) in the adult population aged 15–80 years from 2014 to 2018. Therefore, the objective of this study was to comprehensively describe the prevalence and pattern of A&D by age, sex, education and occupation subgroups, along with its 5-year incidence rate. and also to estimate the association of six other CAD risk factors with A&D in a representative urban population in the southeast of Iran. This will provide a better insight into the severity, progress and association of these two important psychological disorders, which are also known as CAD risk factors, in this region in the past 5 years.

METHODS

This study is a subanalysis of the data regarding mental disorders in the second phase of the study known as KERCADRS. KERCADRS is a population-based cohort that focused on risk factors of CAD conducted from 2014 to 2018. The study population was 9996 adult subjects aged 15–80 years in the city of Kerman, the largest city in southeastern Iran with a population of close to 750 000. The inclusion criteria were to be Iranian, age 15–80 years, living at least 1 year in Kerman, and agreeing to participate in the study (signing an informed consent). Written informed consent was obtained from all participants and their guardian (for those below 18 years old), before taking part in the study, for examination and interview. The study samples were recruited using a non-proportional-to-size one-stage cluster sampling household survey. In brief, we randomly selected 420 zip codes from the post office, each representing a house (called a seed). The recruited individuals were invited to the study setting at the arranged date. The recruitment was continued starting from the house to the surrounding neighbourhood until the number of eligible persons in each cluster reached 24, bringing the total target sample size to 10 000. More details about the research methodology and definition of variables in the second phase (which were similar to that of the first phase) are provided in a published paper.[12]

Interview and measurements

A fasting (12-hour) blood sample was taken from each participant at the time of attendance and the serum was separated. The study participants were examined and interviewed by a physician for medical history of CAD risk factors (including A&D) using a standard structured questionnaire. The questionnaire consisted of personal information, cigarette smoking status ((1) never smoke, (2) currently smoking at least one cigarette per day), opium use status ((1) non-user, (2) occasional user and constant or dependent user) and level of physical activity using the Global Physical Activity Questionnaire.[13] To evaluate the intensity of physical activity, metabolic equivalent (MET) was used. MET is the use of energy in an adult while they are sitting. Moderate physical activity is considered as consuming energy at least four times, and high physical activity at least eight times the energy used while sitting. In other words, a combination of walking and other physical activities with at least 3000 METs/week was assigned as intense, between 1500 and 3000 METs as moderate, and less than 1500 METs as having LPA. Body Mass Index (BMI) was categorised as normal (18.5–24.9 kg/m^2), overweight (25.0–29.9 kg/m^2) or obese (≥30 kg/m^2), and hypertensive individuals as those previously diagnosed with hypertension by a physician, taking antihypertension drugs or having systolic/diastolic blood pressure (BP) of ≥140/90 mm Hg. BP was taken by the physician twice 30 min apart and averaged.

Definition of A&D

The level of anxiety and depressive symptoms were assessed using valid translations of Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI), respectively. Both A&D questionnaires were completed during face-to-face interviews. The total score of each questionnaire ranged from 0 to 63 (containing 21 statements, each scored by a value ranging from 0 to 3). In Iran, the validity and reliability of BAI to assess anxiety are 83% and 80%, respectively. These measures are 85% and 80% for BDI for assessment of depression, respectively. The score ranges for the different levels of depressive symptoms were 0–15, without symptom; 16–30, mild; 31–46, moderate; and 47–63, severe depression. The score ranges for the different levels of anxiety were 0–7, normal; 8–15, mild; 16–25, moderate; and 26–63, severe anxiety. A score higher than 15 for anxiety and a score higher than 30 for depression were taken to be abnormal.[14 15]

Incidence rate of anxiety and depressive symptoms

Out of the 9996 participants, 2813 individuals had also participated in the previous phase of the study. The data of these individuals, who were followed up for 5 years, were used for incidence rate calculation. We used the same method to calculate the incidence rate for A&D. Therefore, for the purpose of brevity, we only present

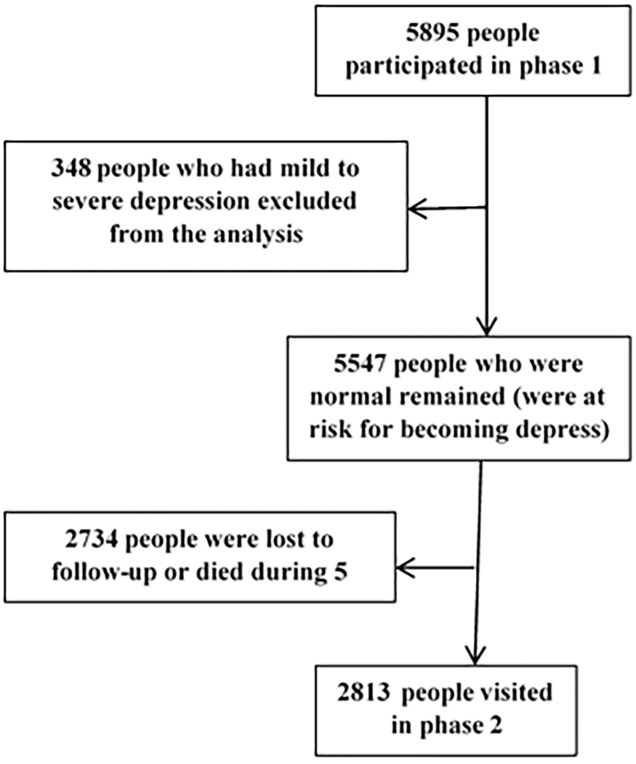

Figure 1 Flowchart of people who participated in both phases of the study (2813 persons) whose data were used for incidence rate calculation.

the method for calculating incidence rate of depressive symptoms here. To calculate the incidence rate of depressive symptoms, we used the data obtained from participants who had been judged normal in phase I and, therefore, were at the risk of developing depression during the 5-year interval between the two phases (figure 1). Therefore, 348 cases out of the 5895 participants who participated in phase I (5.9%) and had shown different levels of depression were excluded from the incidence rate calculation. Out of the remaining participants (5547 cases), 2734 persons (46.4% of participants) were lost to follow-up/died. The number of new depression cases identified during the period of follow-up was considered as the numerator. For those who were normal in the phase I visit, the time difference (in year) between the visit in phase I and the visit in phase II was calculated as person-years at risk. Therefore, the denominator was the sum of the time the 5547 persons who were at risk of developing depression were followed up (person-years). We assumed those who were lost to follow-up had been followed up on an average of 2.5 years (half of overall follow-up time between phases I and II) before being lost to follow-up. Then incidence rate (expressed as person per 1000 person-years) was calculated by the following formula[16]:

$$\text{Incidence rate} = \frac{\text{Number of new cases of depression during 5 years}}{\text{Total person-years for all persons at risk}} \times 1000$$

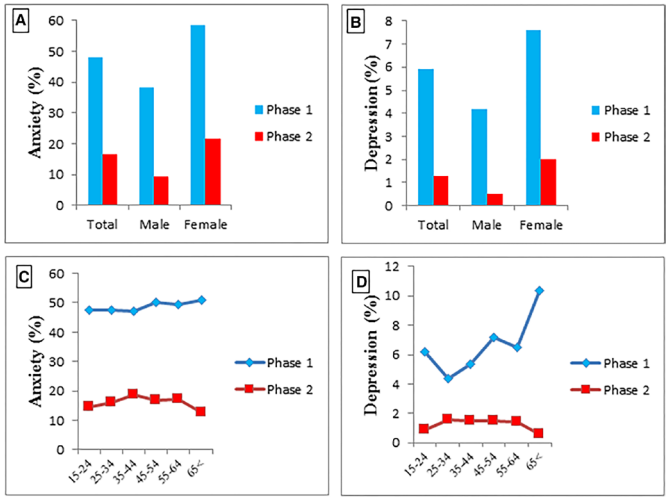

Figure 2 Prevalence of anxiety and depressive symptoms in the participants by sex (A,B) and age (C,D) (total participants=9996). The data of phase I (n=5895) were used here for comparison and were extracted from the paper published previously.[11]

Statistical analysis

Numerical variables were described by mean (SD) and categorical/ordinal variables by n (%). Data management and all statistical analyses were conducted using STATA V.14. Data were analysed using the survey data analysis package. Because of the not-proportionate-to-size sampling method, the total estimates were standardised based on the real sex–age distribution of the target population (national census of Kerman population size for 2016).[17] We reported weighted prevalence for A&D. Multivariate survey logistic regression models were used to determine the potential predictors of A&D, and then, adjusted ORs (AORs) were obtained. The CAD risk factors sex, age, marital status, education level, occupation, cigarette smoke, opium use, physical activity, BMI and hypertension were included in the model.[12] Besides the research question was to determine the potential predictors of A&D, as two CAD risk factors in this region.

RESULTS

We analysed the data for 9996 persons with the age of 46.2±15.7 years (mean and SD), of whom 59.4% (n=5938) were female. The abnormal (moderate and severe) levels of A&D were 41.6% and 16.0%, respectively (figure 2). The prevalence of anxiety and depressive symptoms significantly decreased (from 48.1% to 16.4% and from 5.9% to 1.3%, respectively) between the two rounds (p<0.001). The decrease in the prevalence of A&D between the two study rounds was also significant in subgroups of gender and age (p<0.001, figure 2).

Compared with their counterparts, adjusted analysis showed that people who were female (AOR 2.26), married (AOR 1.06), divorced (AOR 1.19) or widowed (AOR 1.30), hypertensive (AOR 1.25) and overweight/obese (AOR 1.07) were positively associated with anxiety,

and employment (AOR 0.79–0.55), higher education level (AOR0.77–0.50) and advanced age (AOR 0.68–0.37) were negatively associated with anxiety (table 1).

Except for hypertension, which had no association with depression, all other variables showed a positive or negative association with the same trend as they did with anxiety, with the highest AOR for female gender (2.56) and being divorced (2.70), and lowest AOR with student/soldier (0.34) and university education level (0.51) (table 1).

Predictors of A&D

Multiple logistic regression analyses showed that the chances of developing anxiety and depressive symptoms were 2.26 (95% CI 2.17 to 2.36) and 2.56 (95% CI 2.40 to 2.73) times higher in women than it was in men, respectively. Considering the 15–24 age group as reference, the chance of developing A&D for participants showed a reducing trend with increase in age (table 1). Our result suggested that the AOR for both disorders decreased by about 50% among the most highly educated people. Considering unemployment as reference, being a government clerk was associated with 21% (OR 0.79, 95% CI 0.75% to 0.84%) and 46% (OR 0.54, 95% CI 0.49% to 0.59%) lower odds of developing A&D, respectively. The AOR for A&D significantly increased among cigarette smokers and opium users. In terms of physical activity and obesity, the odds significantly increased in the obese and in people with low physical activity.

Incidence rate of A&D

Overall, the incidence rate per 1000 person years was 15.0 for anxiety and 3.9 for depression. A higher incidence rate of A&D was observed in women compared with men (table 2). Also, a higher incidence rate of A&D was observed in people with lower education (compared with those with higher education) and obesity. Cigarette smoking was associated with a lower incidence rate of A&D. However, opium use and low physical activity were associated with a higher incidence rate of depression.

DISCUSSION

Our findings suggested that the overall prevalence of both anxiety and depressive symptoms decreased in the past 5 years. However, such mental disorders are more frequent among certain groups of people such as young adults, women, unemployed and those who smoke cigarettes or opium, people with low physical activity and obesity. We also found that the 5-year incidence rate of anxiety is much higher than the 5-year incidence rate of depression (15.0 vs 3.9).

Overall, the findings of this study showed that currently, 41.6% of the population had mild to severe levels of anxiety symptoms, and 16.0% had mild to severe levels of depressive symptoms, but both were significantly lower than corresponding values in phase I of the study (77.1% and 34.7%, respectively).[11] The reason for this is not clear for us, but the substantial increase in the provision of treatment facilities (including mental health services) by the government in the past 5 years may have played a role.[18] In Iran, in recent years, the government has implemented a health promotion plan to cover treatment costs by offering more efficient health insurance to almost all Iranians. Social determinants such as poverty and unemployment are important factors for mental health[19] as it was shown that the prevalence of these disorders was highest in unemployed and lowest in office clerks (table 1). The other probable influencing factor may be the agreement of the Joint Comprehensive Plan of Action in connection to Iran's nuclear deal between Iran and the 5+1 countries, which raised the hope of lifting the economic sanctions against Iran and freeing billions of dollars in oil revenue and frozen assets. This plan was signed in April 2015 a few months after the commencement of the current study. The third possible explanation is that people have become more aware of common mental disorders. This may have been caused by the increase in the level of education in the country in the 5 years between the two phases. Of the participants in phase I, 18.6% had university education. This figure increased to 19.8%. In phase II, a reverse association was found between the level of education and the prevalence of A&D in the present study (table 1). Regarding the effect of gender and age group, the reduction in the prevalence of A&D between the two phases was similar in both genders and almost in all age groups (see figure 2). This means that the improvement in these health indices was not gender-specific or age-specific and is probably related to the social and political determinants described previously and that affect the whole population.

The second finding of the study was that the prevalence and incidence rate of A&D were higher in women than in men. Although these results differ from some studies (some of which show no difference),[1 2 8] they are consistent with the findings of some others.[9 20] After adjusting the impact of other covariates, there was a significant relationship between sex and A&D. The incidence rate of A&D in women was approximately twice that of men. The present findings seem to be consistent with other research which has found that sex is a contributing factor in A&D.[21 22] This is also confirmed by our earlier observations.[11] This result may be explained by the fact that women experience more positive and negative emotions and with greater intensity than men do.[23]

The 5-year incidence rate of A&D was 15.0 and 3.9 persons/1000 person-years, respectively. The recorded incidence rate of A&D in women was slightly higher than it was in men. It is difficult to compare our findings with other incidence studies because of difference in socioeconomic conditions, time span and follow-up durations. Our findings seem to be consistent with other research, which identified a greater incidence of A&D among women.[8 24] The reduction of prevalence of A&D overall and in both genders during the last 5 years may be due to the low incidence rate of these disorders in this time period.

Table 1 Standardised prevalence, % (95% CI) of A&Ds and AOR (95% CI) for predictors of A&D, community-based cohort study (KERCADRS, second phase, n=9996), Kerman, Iran, 2014–2018

	Anxiety			Depression		
Subgroups	Abnormal % (95% CI)	AOR	P value	Abnormal % (95% CI)	AOR	P value
Sex						
Male	9.2 (8.1 to 10.3)	1		0.5 (0.3 to 0.7)	1	
Female	21.5 (20.3 to 22.7)	2.26 (2.17 to 2.36)	<0.001	2.0 (1.6 to 2.4)	2.56 (2.40 to 2.73)	<0.001
Age group (years)						
15–24	14.6 (12.4 to 17.1)	1		0.9 (0.5 to 1.8)	1	
25–34	16.0 (14.4 to 17.8)	0.68 (0.64 to 0.73)	<0.001	1.6 (1.1 to 2.3)	0.93 (0.84 to 1.02)	0.110
35–44	18.8 (17.2 to 20.6)	0.65 (0.61 to 0.70)	<0.001	1.5 (1.1 to 2.1)	0.91 (0.83 to 1.01)	0.064
45–54	16.7 (15.1 to 18.3)	0.50 (0.46 to 0.54)	<0.001	1.5 (1.1 to 2.2)	0.80 (0.72 to 0.89)	<0.001
55–64	17.2 (15.6 to 18.9)	0.47 (0.43 to 0.51)	<0.001	1.4 (1.0 to 2.0)	0.77 (0.69 to 0.87)	<0.001
+65	12.8 (11.1 to 14.7)	0.37 (0.34 to 0.42)	<0.001	0.6 (0.3 to 1.2)	0.59 (0.51 to 0.68)	<0.001
Marital status						
Single	12.3 (10.5 to 14.3)	1		1.1 (0.7 to 1.9)	1	
Married	17.5 (16.5 to 18.4)	1.06 (1.01 to 1.12)	0.033	1.3 (1.0 to 1.6)	1.16 (1.10 to 1.22)	<0.001
Divorced	21.8 (17.9 to 26.2)	1.19 (1.04 to 1.37)	0.014	6.2 (2.5 to 14.4)	2.70 (2.35 to 3.13)	<0.001
Widowed	31.4 (22.1 to 42.3)	1.30 (1.16 to 1.43)	<0.001	3.1 (1.5 to 6.0)	2.45 (2.02 to 2.49)	<0.001
Educational level						
Illiterate	22.9 (19.9 to 26.3)	1		1.9 (1.1 to 2.5)	1	
Primary	21.2 (19.1 to 23.5)	0.77 (0.71 to 0.83)	<0.001	1.6 (1.2 to 2.0)	0.90 (0.82 to 0.99)	<0.001
Secondary	17.1 (16.0 to 18.3)	0.68 (0.64 to 0.74)	<0.001	1.3 (0.8 to 2.7)	0.79 (0.71 to 0.86)	<0.001
University	11.2 (9.7 to 13.0)	0.50 (0.46 to 0.54)	<0.001	0.5 (0.3 to 1.0)	0.51 (0.46 to 0.56)	<0.001
Occupation						
Unemployed	21.3 (20.0 to 22.5)	1		1.7 (1.1 to 2.5)	1	
Student/soldier	12.0 (9.7 to 14.9)	0.55 (0.50 to 0.60)	<0.001	0.5 (.3 to 1.0)	0.34 (0.30 to 0.38)	<0.001
Self-employed	12.3 (10.9 to 13.9)	0.95 (0.91 to 0.99)	0.046	1.6 (1.2 to 2.0)	0.97 (0.91 to 1.04)	0.376
Office clerk	10.0 (8.1 to 12.3)	0.79 (0.75 to 0.84)	<0.001	1.5 (0.8 to 2.7)	0.54 (0.49 to 0.59)	<0.001
Cigarette smoke						
No	16.6 (15.7 to 17.5)	1		1.4 (1.1 to 1.7)	1	
Yes	14.7 (12.1 to 17.8)	1.39 (1.31 to 1.47)	<0.001	1.1 (0.6 to 2.2)	1.86 (1.72 to 2.01)	<0.001
Opium use						
No	16.4 (15.5 to 17.3)	1		1.3 (1.0 to 1.5)	1	
Yes	17.4 (15.0 to 20.1)	1.22 (1.16 to 1.29)	<0.001	2.4 (1.5 to 3.9)	1.72 (1.61 to 1.83)	<0.001
Physical activity						
Low	18.3 (16.9 to 19.8)	1		1.4 (0.9 to 1.7)	1	
Moderate	15.9 (14.7 to 17.1)	0.91 (0.83 to 0.95)	<0.001	1.6 (1.2 to 2.2)	0.96 (0.91 to 1.02)	0.230
High	13.8 (11.9 to 16.0)	0.88 (0.84 to 0.92)	<0.001	0.9 (0.5 to 1.6)	0.91 (0.87 to 0.95)	<0.001
BMI						
Normal	14.5 (13.2 to 16.0)	1		1.4 (1.0 to 2.0)	1	
Overweight	16.5 (15.2 to 18.0)	1.07 (1.03 to 1.10)	<0.001	1.1 (0.8 to 1.6)	0.91 (0.87 to 0.95)	<0.001
Obese	19.7 (18.0 to 21.5)	1.07 (1.02 to –1.11)	0.001	1.6 (1.1 to 2.1)	1.13 (1.1 to 1.19)	<0.001
Hypertension						
Normal	15.4 (12.7 to 18.5)	1		1.1 (0.9 to 1.7)	1	
Hypertensive	16.5 (15.7 to 17.4)	1.25 (1.20 to 1.31)	<0.001	0.9 (0.6 to 1.6)	1.00 (0.94 to 1.07)	0.938

A&D, anxiety and depressive symptom; AOR, adjusted OR; BMI, Body Mass Index; KERCADRS, Kerman Coronary Artery Disease Risk Factors Study.

Table 2 Overall and subgroup 5-year incidence rate (person per 1000 person-years) of anxiety and depressive symptoms among the adult population in Kerman, Iran, community-based cohort study (KERCADRS, first phase, 2009–2012, and second phase, 2014–2018; n=2813 match cases)

	Anxiety			Depression		
Subgroups	New cases	Person-years	Incidence rate (95% CI)	New cases	Person-years	Incidence rate (95% CI)
Overall	97	6466.5	15.0 (12.2 to 18.3)	27	6923.5	3.9 (2.6 to 5.7)
Sex						
Male	53	4250.5	12.5 (9.3 to 16.3)	10	3571	2.8 (1.3 to 5.2)
Female	44	2210.5	19.9 (14.5 to 26.7)	17	3269.5	5.2 (3.0 to 8.3)
Educational level						
Illiterate	9	482.5	18.7 (8.5 to 35.4)	2	526	3.8 (0.5 to 13.7)
Primary	16	897.5	17.8 (10.2 to 29.0)	7	1093.5	6.4 (2.6 to 13.2)
Secondary	48	3252.5	14.8 (10.9 to 19.6)	13	3513.5	3.7 (2.0 to 6.3)
University	24	1832.5	13.1 (8.4–19.5)	5	1666.5	3.0 (1.0 to 7.0)
Cigarette smoke						
No	89	5629	15.8 (12.7 to 19.5)	25	6097.5	4.1 (2.7 to 6.1)
Yes	8	575	13.9 (6.0 to 27.4)	2	859	2.3 (0.3 to 8.4)
Opium use						
No	84	5250.5	16.0 (12.8 to 19.8)	23	6052.5	3.8 (2.4 to 5.7)
Yes	13	928.5	14.0 (7.4 to 23.9)	4	793.5	5.0 (1.4 to 12.9)
Physical activity						
Low	47	2737.5	17.2 (12.6 to 22.8)	14	2916.5	4.8 (2.6 to 8.1)
Moderate	31	2912.5	10.6 (7.2 to 15.1)	10	3289.5	3.0 (1.5 to 5.6)
High	19	840	22.6 (13.6 to 35.3)	3	739.5	4.1 (0.8 to 11.9)
BMI						
Normal	34	3591.5	9.5 (6.6 to 13.2)	8	3076	2.6 (1.1 to 5.1)
Overweight	27	1925	14.0 (9.2 to 20.4)	10	2325.5	4.3 (2.1 to 7.9)
Obese	36	917.5	39.2 (27.5 to 54.3)	9	1451.5	6.2 (2.8 to 11.8)

BMI, Body Mass Index; KERCADRS, Kerman Coronary Artery Disease Risk Factors Study.

Surprisingly, despite the high prevalence of A&D in old age, one unanticipated finding was that the chance of developing A&D in the 15–24 age group was higher than it was in other groups. The possible mechanism may be that Iran is a country with a highly educated young population. Unfortunately, the rate of unemployment among educated and young people is high in Iran, and it has been shown that employment is a very important factor in reducing A&D (table 2),

Another risk factor associated with A&D was discordant marital life (separated/widowed). This finding is consistent with previous studies.[22 25 26] Loss of spouse is associated with a variety of adverse health outcomes, including decreased physical well-being, increased mortality risk, and poor cognitive and functional health compared with married counterparts. Poor mental health is one of the most immediate responses to loss of spouse.[27 28]

Another important finding of this study was that university education is a protective factor against A&D. The fact that low level of education is an independent risk factor for mental and mood disorders has been shown in different studies.[11 22 29] Higher education improves self-esteem, vulnerability and living standards.[30] Moreover, educated people have more hope of finding a suitable job and sufficient income, which contributes greatly to their mental health in our community.[11]

In line with previous studies, our results demonstrated that unemployment increases the chance of developing A&D.[22 31 32] Economically, unemployment status increases the risk of development and progression of psychiatric disorders, and strong evidence is available in this regard for depression and anxiety disorders.[33–35] Unemployed people may develop some degree of A&D due to income inequality and the feeling of uselessness, failure and incompetence,[36] especially in countries with weak social security support and unemployment insurance like Iran. A longitudinal study showed a causal relation between socioeconomic position and depressive symptoms. It has indicated that poor socioeconomic conditions lead to depression, which, in turn, can cause further damage to patients' economic prospects.[37]

The results illustrate that high physical activity decreased the chance of developing A&D. This can be due to the fact that exercising increases endorphin release in the brain. Endorphins have been proven to cause the feeling of happiness.[38]

The results provided evidence that obesity may lead to A&D or may be one of their consequences. Obese individuals had a significantly higher risk of developing major anxiety and depressive disorder over the 5-year follow-up period. There are a few studies that have tested obesity as a predictor of A&D, but most of them found that obesity or increased BMI was associated prospectively with A&D.[39 40] Stigma and social prejudice against obesity may mediate this link.[39 41] Functional impairment, which is greater among obese individuals,[42] may also mediate the effect of weight status on A&D.

Cigarette smoking and opium use were highly comorbid with A&D (table 1). This was consistent with the results of a review study that showed smoking was strongly associated with anxiety disorders and clinical depression.[43] Sonntag *et al* found that individuals with social phobia were more likely to also have nicotine dependence.[44] Many individuals may smoke because of the presumed calming effects of nicotine and as a way of managing their anxiety. However, smoking may rather serve to exacerbate symptoms by increasing the heart rate, BP and plasma norepinephrine and epinephrine.[45] Some studies indicate that 70% of depressed people have a history of drug abuse, and 75% of the people with a history of drug abuse suffer from depression. In fact, drug users face financial problems, unemployment, suicidal tendencies and low social support, all of which can lead to A&D.[46]

The collected data showed that hypertension was associated with an increased chance of developing anxiety but may not be associated with an increased chance of developing depression. It is possible that labelling individuals as hypertensive may also play a role in the interrelationships of stress, anxiety and high BP.[47 48] This is consistent with several other studies that have demonstrated higher psychological distress and lower well-being in hypertensive patients.[47 48] Consistently, in a previous study, depressive disorder was associated with lower BP.[49]

We should acknowledge the limitations of our study. First, we looked at A&D as a coronary risk factor and not as a comprehensive and specific problem in the population. Second, our study was conducted in the southern part of Iran, which may limit the generalisability of our findings to the whole nation. Nevertheless, the study benefits from the large sample size with a wide age range, as well as its 5-year follow-up. As A&D increases the risk of diabetes, dyslipidaemia and hypertension, the study presents beneficial and definitive information to the health authorities, and primary care/family practice system should have strategies in preventing and controlling A&D.

CONCLUSION

Overall, the results showed some promising signs of reduction in the prevalence of A&D in the last 5 years. However, higher prevalence of A&D in young people and women, along with their association with unemployment, smoking, opium use, low physical activity and obesity, all prevalent in the region, highlights the importance of screening for depression and anxiety disorders. Preventive or educational intervention is needed to change unhealthy lifestyles and to reduce future healthcare costs.

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