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Abstract

Background: Mental disorders of adulthood can be traced to childhood and adolescent disorders so attention to the mental health of young people is important.

Objectives: We aimed to determine the mental health status of high-school students in Khorramabad and the factors that may affect it.

Methods: This cross-sectional study included 1 202 high-school students in Khorramabad in the 2015–2016 academic year. Students were selected using stratified and multistage cluster random sampling. Data were collected on sociodemographic characteristics of the students, and the General Health Questionnaire (GHQ-28) was used to assess symptoms of mental disorders. Logistic regression analysis was used to evaluate the relationship between the

presence of symptoms of mental disorder and sociodemographic characteristics.

Results: The mean age of the students was 16.1 (SD 0.9) years and 52.7% were girls. Overall, 481 (40%) students (34% of males, 46% of females) had symptoms of mental disorders. Most had mild symptoms; 5% had severe symptoms. Symptoms of anxiety, depression and social impairment were seen in 40%, 33% and 32% of the students respectively; significantly more girls had these symptoms (P

Conclusions: This study found a high prevalence of symptoms associated with mental disorders in the adolescents in Khorramabad. Counselling centres in schools are needed to offer psychiatric counselling services to students and to implement regular mental health training programmes.

Keywords: Mental health, adolescents, high-school students, anxiety, depression, Iran.

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Introduction

Solid evidence shows that mental disorders of adulthood can be traced to childhood and adolescent disorders, and that preventive and treatment interventions can stop their development in childhood, adolescence and adulthood (1).

Given that the years of adolescence are a very formative period, vulnerabilities to mental disorders can seriously affect the abilities and life of the individual. Therefore, it is especially important to pay attention to the material and psychological needs of young people. In addition to the efforts we make to keep our children in good health, and the arrangements we make for their education, we need to better understand factors that can harm their mental and psychological wellbeing so that appropriate solutions can be found to prevent and relieve mental disorders and problems. Knowing the prevalence of these disorders and psychopathologies in adolescents is a first step to tackling them (2).

Several studies on the prevalence of symptoms associated with mental disorders have been conducted in the Islamic Republic of Iran using various instruments, and these indicate a high prevalence of such symptoms. A study in rural and urban populations over 15 years of age in the cities of Borujen and Shahrekord, using the Symptom Checklist-90-R (SCL-90-R) test reported a prevalence of 18.3% of symptoms associated with mental disorders (3). Another study of female students in Urmia reported a prevalence of depression of 68.1% as assessed with the Beck Depression Inventory (4). The prevalence of symptoms associated with mental disorders was reported to be 51.8% in students at Mazandaran University of Medical Sciences using the SCL-90-R test (5); 37.2% among male and female school students in Kurdistan, as assessed with the Child Symptom Inventory (6); 33% among Iranian university students using the General Health Questionnaire (GHQ-28) questionnaire (7); and 40.7% in students in Bushehr also using the GHQ-28 instrument (8). A study conducted on adults older than 18 years in Kashan reported a prevalence of symptoms associated with mental disorders of 29.2% (9), while in the Iranian National Health and Disease Survey Project, the prevalence in individuals older than 15 years was 21%, with the highest prevalence reported in the Chaharmahal and Bakhtiari province (39.1%) (10). In addition, 60.2% of students in Hamadan scored more than 23 on the general scale of GHQ-28 (11). In this instrument, the cut-off point for determining whether individuals are at risk of mental disorders is 23 and higher.

To prevent the occurrence of mental disorders, it is necessary to determine the symptoms of mental problems among students. The availability of such information can help improve mental health programmes. Therefore, given the aforementioned considerations and the increase in the prevalence of symptoms associated with mental disorders in society as a whole and especially among the adolescents and young people (3–8), and also the absence of previous studies conducted with appropriate instruments in Khorramabad, this study aimed to determine the prevalence of symptoms associated with mental disorders among high-school students in Khorramabad, Islamic Republic of Iran, using the GHQ-28. This standardized questionnaire can be used as a preliminary screening device and screens students for mild mental symptoms such as depression, anxiety, somatic symptoms and social functioning.

Methods

Study design, sample and setting

The sample in this cross-sectional study was drawn from all high-school students in the city of Khorramabad, in the west of the Islamic Republic of Iran, during the academic year of 2015–2016. Students were selected through stratified sampling and multistage cluster random sampling as follows: the high schools were divided into 2 strata – state and nonprofit schools. Nonprofit schools are run by the government but parents pay an annual fee in return for which schools provide the students with welfare facilities and services. Students of these schools are generally of a higher social and economic status than those of public schools. Then, each stratum was divided into substrata of girls' and boys' high schools. In the next stage, clusters were chosen from the schools. Each cluster consisted of 3 strata, which were the school grades. Then, new clusters, i.e. the classes, were selected from each grade. Finally, students were selected from each class by systematic sampling.

The initial sample size was estimated using the formula: $n = z2(1–\alpha/2) \times p(1–p)/d2$, where $\alpha = 0.05$, $z(1–\alpha/2) = 1.96$, $p = 0.31$ and $d = 0.03$; this was based on a pilot study with 100 participants The calculated sample size obtained was 913 individuals. Given the design effect, the final sample size was increased by 50% to 1 369 individuals. However, because of drop-outs, 1 202 students, 569 boys and 633 girls, participated in the study.

Questionnaire and data collection

Data were collected with a 2-part questionnaire. The first part included demographic, educational and family characteristics of the students, and the second part included the GHQ-28 questionnaire as standardized for the Islamic Republic of Iran (12). The standardized GHQ-28 questionnaire is a self-completed questionnaire with 28 items (4 subscales with 7 questions in each subscale). The subscales in the questionnaire include physical symptoms, anxiety symptoms, social impairment, and depression symptoms. To confirm the validity of the questionnaire, content validity was assessed by 5 specialists in the field (2 psychologists, a biostatistician, a specialist in health education and a psychiatrist). The reliability of the questionnaire was determined using the Cronbach alpha test measured for 100 students whose characteristics were similar to the target group. Cronbach alpha values were: 0.747 for somatic complaints, 0.780 for anxiety and sleep disorders, 0.803 for social impairment, 0.882 for depression and 0.918 for the whole scale. The reliability of the questionnaire has been reported as 80% and the mean sensitivity as 84% and specificity as 82% (12,13). The reliability of the GHQ questionnaire has also been reported as 80% in studies in the Islamic Republic of Iran (7,8,11,14).

A score was given for each question using a 4-point Likert scale with the scores of 0 to 3. The scores were added to obtain the score for each criterion and finally the total mental health score was obtained by adding the scores of the criteria. The cut-off points in the questionnaire based on Iranian norms are as follows: the cut-off point for susceptible individuals was set at ≥ 23 for the total scale, and ≥ 7 for any of the subscales (15).

Data analysis

Data were coded and then analysed using SPSS, version 15. Descriptive statistics were used to classify the data and determine the prevalence of symptoms associated with mental disorders. The results are presented as frequencies, and mean and standard deviation (SD). Logistic regression analysis was used to determine the association between sociodemographic characteristics and symptoms associated with mental disorders. Variables with a P-value **Ethical considerations**

The study was approved by the University Ethics Committee of the Lorestan University of Medical Sciences (No. IR.LUMS. REC.1392.1184). Authorization of school officials was obtained to conduct the study. The objectives of the study were explained to the participants and they were told that their information would remain confidential. Written consent was obtained from the students and their families to participate in the study. The students' participation in the study was optional and, if requested, the students and their families were informed of the results of the test.

Results

Table 1 shows the demographic and background characteristics of the students. Just over half were girls, 633 (52.7%). The ages of the students ranged from 14 to 18 years with a mean age of 16.1 (SD 0.9) years. The greatest proportion (40.4%) were sophomores (2nd year of high school). In terms of academic stream, 297 (24.7%) were in the general studies stream, 261 (21.7%) in mathematical sciences, 304 (25.3%) in empirical sciences, and 340 (28.3%) in human sciences. The education levels of most of the students' mothers 1057 (87.9%) and fathers 888 (73.9%) were below university. Regarding parental profession, 504 (41.9%) of the fathers were government employees and 445 (37.9%) were self-employed while 964 (80.2%) of the mothers were housewives.

Table 2 shows the severity of symptoms associated with mental disorders in the students by sex. Overall, 481 (40%) of the students had symptoms associated with mental disorders – including 193 (33.9%) boys and 288 (45.5%) girls. Regarding the severity of the symptoms associated with mental disorders, 361 (30%) had mild symptoms, 95 (7.9%) had moderate symptoms, and 25 (2.1%) showed severe symptoms.

Table 3 shows the types of symptoms associated with mental disorders in the high-school students by sex. About 40% of the students had symptoms associated with anxiety, while 33% had symptoms of depression and 32% showed symptoms of social impairment. Overall, the mean score was highest for anxiety, 6.1 (SD 4.2). Significantly more girls showed symptoms of

depression, anxiety and somatic complaints (P

Table 4 shows the results of the bivariate analysis of sociodemographic characteristics associated with symptoms of mental disorders. Age, sex, grade, academic stream and father's and mother's occupation had P-values

Table 5 shows the results of the logistic regression analysis. Adjusting for the effects of the other confounding variables, the odds of having symptoms associated with mental disorders were 58% greater in girls than boys

(P

(P = 0.035) and 60% (P = 0.001) less likely to be susceptible to mental disorders than those whose fathers were unemployed. Moreover, students whose mothers were government employees were 49% less likely to have symptoms of mental disorders compared to those whose mothers were housewives (P = 0.01).

As regards grade and mental health status, 2nd- and 3rd-year students respectively were 2.40 (P = 0.001) and 2.55 (P = 0.017) times more likely to have symptoms of mental disorders than 1st-year students. No significant relationships were found between age and symptoms of mental disorders (P = 0.087).

Discussion

Our study showed that 40% of the students had symptoms associated with mental disorders according to the GHQ-28 questionnaire, 34% of the boys and 45% of the girls. Our results are in line other studies conducted in the Islamic Republic of Iran using the same instrument (GHQ-28). A meta-analysis of Iranian university students demonstrated that 33% showed symptoms associated with mental disorders (7), while the study on the students in Bushehr found a prevalence of 40.7% for symptoms associated with mental disorders (8). In the study in Hamadan, 60.2% of the students were predisposed to mental disorders (11). The Iranian National Health and Disease Survey Project, which determined the prevalence of cases suspected of mental disorders among individuals older than 15 years, reported that the highest prevalence of such disorders was 39.1% which was observed in Chahrmahal and Bakhtiari Province (10), which is also consistent with the results of our study.

On the other hand, in a study on high-school students in Rafsanjan, using the SCL-90-R questionnaire, the prevalence of symptoms associated with mental disorders was 16.6% (15). The results of a study in Kashan on people over 18 years using the GHQ-28 questionnaire,

which was performed by interview, found a prevalence of 29.2% of suspected of mental disorders (9). In addition, a national epidemiological survey on 25 180 Iranian individuals older than 18 years reported that 10.81% of the respondents were suspected of having mental disorders (16). This study used the Mental Disorders – IV Criteria as the instrument, which was completed in structured interviews with clinical psychologists.

Some of the differences in the prevalence of symptoms associated with mental disorder between the various studies, including ours, may be due to the different tools and methods of data collection used. The GHQ-28 questionnaire is a self-administered questionnaire in which the participant reads the questions personally and chooses one of the options. In the health and disease survey project (10), which screened the mental health status of individuals over 15 years of age, including both literate and illiterate participants, and showed a prevalence of 21% with symptoms of mental disorders, the GHQ-28 questionnaire was filled out by interviewers. It seems that asking individuals questions about their mental health status in order to screen them for symptoms of mental disorders can affect their responses because many people do not want to talk openly to others about their mental problems.

Additionally, our higher prevalence may be due to specific age, economic, social and cultural conditions. Young people may experience intense psychological stress and be psychologically vulnerable for various reasons, including physical and sexual development, strong emotions, their search for an identity, fear of responsibility, and worries about going to university or choosing a job. Students, more than anyone else, need social acceptance and support, and when the appropriate conditions and amenities are not available, their mental and physical health can be damaged (17).

In the subscales of the questionnaire, the highest susceptibility scores were for symptoms of anxiety, depression, social impairment and somatic complaints (hypochondriasis) respectively.Anxiety was the most common symptom found in our students (39.8%), followed by depression (33.1%). Highest rates for anxiety were reported in other studies (15,18). In the study on high-school students in Rafsanjan using the SCL-90-R questionnaire, anxiety disorders, with a prevalence of 8.4%, were the most common mental disorder (15). In the study on students in Hamadan using the GHQ-28 test, anxiety (46.5%) was the second most common mental problem after social impairment (49.5%) (11).

In our study, no significant relationships were found between age and symptoms associated with hypochondriasis, anxiety, depression, and social impairment ($P = 0.62$). However, the study in Kashan on people over 18 years (9), the meta-analysis of the mental status of Iranian university students (7), and the study on students in Hamadan, all using the GHQ-28 test, all

reported a significant relationship between age and the mental health of the participants for each of these disorders, with their prevalence increasing with age.

Our study showed significant relationships between symptoms of mental disorders in the students and their gender, grade and parental occupation. Our results for gender are consistent with the results of the study by Basnet (18), which reported a prevalence of depression of 32.43% among female students versus 28.07% in male students (19). In the study in Rafsanjan, using the SCL-90-R questionnaire, the prevalence of symptoms associated with mental disorders was 21.6% among females and 10.6% among males (15). A similar result was found in Kashan using the GHQ-28 questionnaire – the prevalence of suspected of mental disorders was 35.5% among women and 21.2% among men (9). Furthermore, the national epidemiological survey reported a prevalence of suspected of mental disorders of 14.34% among women and 7.34% among men (16). These results emphasize the higher susceptibility of females to symptoms of mental disorders (20). The higher susceptibility of girls compared with boys could be because of biological factors, the role of gender, environmental stress, limited sources of satisfaction, and limitations on social participation of girls in the society. Female high-school students tend to consider this period of their lives (puberty as a developmental stage) very stressful, which may be due to inadequate and inappropriate education on the issues related to pubertal health, incorrect sources of information which may provide unhelpful and possibly erroneous information, and hormonal factors. In addition, fear of the future, marriage and educational failure, and their social role and the current traditions and culture of the society are environmental stressors which may increase the susceptibility of female high-school students to symptoms associated with mental disorders.

We found no significant relationship between susceptibility to symptoms of mental disorders and parental education. Other studies using the GHQ-28 test also did not show any significant relationship between maternal education and mental health symptoms (7,21).

However, parental occupation was significantly associated with symptoms of mental disorders in our study: students whose fathers were government employees, manual labourers and farmers were less susceptible to symptoms of mental disorders than those with unemployed fathers. Moreover, susceptibility to mental disorders was significantly lower among the students whose mothers were government employees compared with those whose mothers were housewives. A study in Maku, Islamic Republic of Iran, using the GHQ-28 test, reported a significant difference in the rate of mental health problems between students with employed and non-employed mothers: students with non-working mothers experienced more mental disorders than those with working mothers (22). The reason may lie in the fact that the working mothers had at least a bachelor's university degree; higher maternal education can affect the communication of mothers with their children and their mental health.

Our results revealed a significant relationship between susceptibility to symptoms of mental disorders and education (academic stream): students in empirical sciences and mathematical sciences were less likely to have symptoms of mental disorders than those in the general and human sciences stream. Students studying empirical sciences and mathematical sciences tend to have better job prospects in the future because more job opportunities will be available to them, and this could affect students' mental health status.

Conclusions

Our study shows that many adolescents are predisposed to developing mental disorders, including anxiety, depression, disorders of social functioning and somatic complaints (hypochondriasis). Health and education authorities need to consider starting counselling centres in schools to offer psychiatric counselling services, implementing regular mental health training programmes for school staff, students and parents, and including materials on mental health in school textbooks. It is recommended that qualitative studies be conducted to investigate this issue more thoroughly.

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Competing interests: None declared.

Facteurs associés à l'état de santé mentale d'élèves du secondaire à la République islamique d'Iran

Résumé

Contexte : Les troubles mentaux apparaissant à l'âge adulte trouvent parfois leur origine dans des troubles de l'enfant et de l'adolescent. Il est donc important d'accorder une attention particulière à la santé mentale des jeunes.

Objectifs : Notre objectif était de déterminer l'état de santé mentale d'élèves du secondaire à Khorramabad (République islamique d'Iran) ainsi que les facteurs pouvant l'influencer.

Méthodes : La présente étude transversale incluait 1202 élèves du secondaire de Khorramabad au cours de l'année scolaire 2015-2016. Les élèves ont été sélectionnés à l'aide de la méthode d'échantillonnage aléatoire en grappes stratifié et à plusieurs degrés. Des données ont été recueillies sur les caractéristiques sociodémographiques des élèves, et le questionnaire général sur la santé en 28 items (GHQ-28) a été utilisé pour évaluer les symptômes des troubles mentaux. On a recouru à l'analyse de régression logistique pour mesurer la relation entre la présence de symptômes de troubles mentaux et les caractéristiques sociodémographiques.

Résultats : L'âge moyen des élèves était 16,1 ans (ET 0,9) et 52,7 % étaient des filles. Au total, 481 (40 %) élèves (34 % de garçons et 46 % de filles) présentaient des symptômes de troubles mentaux. La plupart avaient des symptômes bénins, et 5 % des symptômes graves. Des symptômes d'anxiété, de dépression et de déficience sociale étaient observés pour 40 %,

33 % et 32 % des élèves respectivement. Un nombre de filles considérablement plus élevé présentait ces symptômes (p

Conclusions : Cette étude a révélé une prévalence élevée de symptômes associés à des troubles mentaux chez les adolescents à Khorramabad. Des centres de conseil sont requis dans les écoles afin d'offrir des services de conseils psychiatriques aux élèves et de mettre en place des programmes réguliers de formation en santé mentale.

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.(P 32% 33% 40%

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