The prevalence and predictive factors of somatization and its relationship with anxiety and depression in Iranian population

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Summary

Introduction. *Today mental disorders are important concerns of health care system in all countries. Among different mental disorders; depression, anxiety, and somatization are more frequent. This manuscript was conducted to evaluate the frequency of somatization symptoms, its related factors and the correlation between somatization symptoms and anxiety and depression disorders in Iranian population.*
Methods. *The cross-sectional study was conducted in Kerman, Iran, 2017. Participants were selected from patients who referred to the Clinics of Educational Hospitals using convenience sampling method. The PHQ-15 and HADS questionnaire were used to assess the somatization and depression and anxiety, respectively. The univariate and multivariate logistic regression was used to determine the predictive factors of somatization symptoms. The correlations between each PHQ-15 item score and anxiety and depression score were expressed.*

Results. *The frequency of mild, moderate and severe levels of somatization was 66.3%, 20.5% and 13.1%, respectively. Considering multivariate logistic regression analysis; age was associated with somatic symptoms, significantly. The risk of somatic symptoms was 3.4 times more in Divorced/Widowed participants than single ones (p-value: 0.035). There were significant positive correlations between anxiety and depression scores. Each additional score of anxiety and depression were associated with 1.14 times more likely (p-value: < 0.001) and 1.11 times less likely (p-value: 0.003) of having somatic symptoms, respectively.*
Conclusion. *The burden of somatization, depression and anxiety is high in Iranian population. Psychologists and policymakers should consider these predictive factors for primary prevention of somatization at the personal and community level, respectively.*

Introduction

Today mental disorders are important concerns of health care system in all countries, with a major burden of disease and catastrophic socio-economic effects [1]. The prevalence of psychological morbidity in north Amira and Western Europe were estimated by different studies from 14% to 50% among primary health care patients [2, 3]. Approximately 80% of mental disorders occur in low or middle-income countries [1]. Among different mental disorders; depression, anxiety, and somatization are more frequent [4].

A population-based study on 36,000 Iranian adult populations in 2015 showed that 23.4% of them have mental disorders. Among cases, the prevalence of somatization (29.8% of cases) and anxiety (29.5% of cases) was higher. The prevalence of mental disorder was higher in females, individuals living in urban areas and older age peoples. Single individuals, students, employed and more educated people suffered less frequent from mental disorders comparing other groups [5].

Somatization is identified by multiple and recurrent complaints regarding somatic symptoms. Somatization has a chronic course and high psychiatric co-morbidity especially anxiety and depression. This situation causes the suffering of the patients and their family [6].Different studies concluded that 20.4% [7], or 30% [8] of patients with somatoform disorders suffer from anxiety and depressive disorders, concurrently. Women, older people, and widowed or divorced individuals reported somatic symptoms more than others, significantly [7]. Also, the results of studies show somatization occurs commonly in people with low socio-economic status and low educational level [9].

Somatization has direct and indirect consequences on society. Direct consequences are resources that use to treat and manage it such as costs of drugs, laboratory tests, and health care personnel. Indirect consequences are absenteeism from work, reduction or loss of productivity and quality of life. To the best of our knowledge, there are limited studies about somatization and its risk factors among Iranian population [5, 10]. Due to the importance of somatization and the concurrence of somatization with other mental disorders, this study was conducted to evaluate the frequency of somatization symptoms, its related factors. Also, the correlation between somatization symptoms and anxiety and depression disorders was assessed in Iranian population.

Material and methods

This cross-sectional study was conducted in Kerman, Iran, from July to December 2017. Kerman Province covers about 3% of Iran population and is located in the Southeast of Iran. Participants were selected from patients who referred to the Clinics of Educational Hospitals. Considering Municipality district (4 districts), one Clinic of Educational Hospitals in each Municipality district was selected randomly. Individuals who have at least 18 years old, and did not have any dementia or mental retardation or medical condition requiring hospitalization were included in the study using convenience sampling method. Verbal informed consent was obtained. Considering the prevalence of somatization symptoms in general population as 22% [9] type I error as 0.05, confidence level as 0.95, and precision as 0.04 the total sample size was calculated as 412. Considering the design effect as 1.25, the total sample size was calculated as 515.

After obtaining the permission from the Ethics Committee of Kerman Medical University, trained interviewers described the importance and the aim of this study and asked participants to complete the questionnaires carefully. The process of interview was continued until the completeness of sample size. Two questionnaires were used. The valid and reliable Patient Health Questionnaire-15 (PHQ-15) questionnaire (Cronbach's alpha: 0.76) was used to assess the somatization symptoms [9].

Thirteen symptoms (including stomach pain, back pain, pain in arms, legs, and joints, headache, chest pain, dizziness, fainting spells, palpitation, shortness of breath, pain during sexual intercourse, Constipation/diarrhea, nausea and menstrual pain or problem) were asked for the last four weeks and participants answered them as "not bothered at all", "bothered a little", and "bothered a lot". These answers were coded as a Likert scale from 0 to 2, respectively. Feeling tired and Sleep problems were asked, additionally. Participants answered the questions as the Likert scale as 0 ("not at all"), 1 ("several days"), and 2 ("more than half the days" or "nearly every day"). Therefore the minimum and maximum score of the PHQ_15 questionnaire were 0 and 30, respectively. The total score < 5 was considered as no somatization disorder. Also, the total score classified to the three level of somatization as mild (Score ≥ 5), moderate (Score ≥ 10) and severe (Score ≥ 15) [11-13]. Finally, for regression analysis, the total score of PHQ-15 was coded as 0 "< 10 scores" and 1 "≥ 10 scores". The menstruation item was excluded, because its function is only for women and other studies excluded this item from their study, therefore we can compare the results of this study to other studies [14].

The Hospital Anxiety and Depression Scale questionnaire (HADS) was used to assess the anxiety and depression. The validity and reliability of this questionnaire were assessed later with Cronbach's alpha 0.83 for anxiety subscale and 0.82 for depression subscale. This questionnaire measures the severity of anxiety and depression through last week. This questionnaire includes 14 items, 7 items for measuring the severity of depression and 7 items for measuring the severity of anxiety.

The responses were coded as a Likert scale from 0 to 3. Therefore a total score of HADS questionnaire ranged from 0 to 21 for each anxiety and depression subscale. It is classified as normal (score: 0-7), mild (score: 8-10), moderate (score: 11-14), severe (score: 15-21) [15]. Completed questionnaires with more than 10% non-response questions were excluded from the analysis.

HADS and PHQ are frequently used questionnaires. These questionnaires are self-administered, but studies demonstrated that these questionnaires could diagnose disorders with an accurate estimation [16, 17].

The socio-demographic questions including age, gender, marital status, occupational status, level of education, living condition and socio-economic status (participants' estimation of their socio-economic status) were asked at the end of questionnaires. The severity of somatization, anxiety and depression disorders were described. The data were analyzed using IBM SPSS 20.0 software (IBM SPSS Inc. Chicago, IL, USA). The univariate and multiple logistic regressions were used to determine the effects of demographic factors, and anxiety and depression score on somatization symptoms. After conducting univariate logistic regression analysis, all variables with P-value ≤ 0.2 were included in the multiple logistic regression analysis (Enter Method).The correlation between each PHQ-15 item score and anxiety and depression score were expressed using Pearson correlations. The significance level was set at 0.05(Two-tailed analysis).

Results

SAMPLE CHARACTERISTICS

A total of 502 questionnaires were completed (Response rate: 97.5%). The socio-demographic characteristics of samples are described in Table I. The mean ± SD of the age was 44.78 ± 9.6.About 60% of participants were women. Majority of participants were married. Approximately 28.2% of male participants and 25.8% of female participants had a university education. Majority of them were housewife and lives in the urban area. From the point of view of participants, only 14% of participants reported their socio-economic status as bad (Tab. I).

The mean ± SD of the total PHQ-15 score was 8.53 ± 5.6. The median and interquartile range was 7.9 and 7. According to the classification of PHQ-15 score, the frequency of no, mild, moderate and severe levels of somatization were 23.7% (n = 79), 42.6% (n = 254), 20.5% (n = 103) and 13.2% (n = 66), respectively. Comparing different symptoms, feeling pain in arms, legs, and joints, stomach pain and headache have a highest mean score, also shortness of breath, chest pain, pain during sexual intercourse and palpitation have a lower mean score, respectively (Tab. II).

ANXIETY AND DEPRESSION

The mean ± SD of anxiety and depression scores were 7.20 ± 4.9 and 5.72 ± 4.8, respectively. Nearly 56.2% of participants did not have any anxiety disorder and 66.2% of participants did not experienced depression disorders.

Tab. I. Socio-demographic characteristics of participants.

Socio-demographic characteristics	Males (n = 204)		Females (n = 298)		Total sample (n = 502)	
	n	%	n	%	n	%
Age group						
10-30 years	60	30.2	100	34.2	161	32.7
31-50 years	99	49.7	141	48.3	241	48.9
51-70 years	35	17.6	44	15.1	79	16.0
71-90 years	5	2.5	7	2.4	12	2.4
Marital status						
Single	49	24.3	47	15.8	96	19.2
Married	145	71.8	219	73.7	366	73.1
Divorced/Widowed	8	4.0	31	10.4	39	7.8
Education						
Illiterate or primary school	19	9.4	42	14.1	61	12.2
Secondary school	27	13.4	44	14.8	71	14.1
High school	99	49.0	135	45.3	235	46.8
University	57	28.2	77	25.8	135	26.9
Occupational status						
Government job	64	33.2	46	16.1	111	23.1
Non-government job	100	51.8	36	12.6	137	28.5
Retired	27	14.0	12	4.2	39	8.1
Housewife/Unemployed	2	1.0	192	67.1	194	40.3
Living Condition						
Urban	173	89.2	259	91.2	434	90.4
Rural	21	10.8	25	8.8	46	9.6
Socio-economic status						
Bad	30	14.9	40	13.6	70	14.1
Moderate	51	25.4	91	31.0	142	28.6
Good	62	30.8	80	27.2	142	28.6
Very good	58	28.9	83	28.2	143	28.8

PHQ-15 mean scores

Tab. II. The mean score, Standard Deviation and frequency of answers to PHQ-15 items.

Complaint	Mean	SD	Not at all N (%)	A little N (%)	A lot N (%)
Stomach pain	0.85	0.7	181 (36.1)	213 (42.4)	108 (21.5)
Back pain	0.60	0.6	262 (52.2)	177 (35.3)	63 (12.5)
Pain in arms, legs, joints	0.93	0.7	155 (30.9)	232 (46.2)	115 (22.9)
Headache	0.82	0.6	161 (32.1)	276 (55.0)	65 (12.9)
Chest pain	0.37	0.6	351 (69.9)	114 (22.7)	37 (7.4)
Dizziness	0.58	0.6	255 (50.8)	203 (40.4)	44 (8.8)
Fainting spells	0.68	0.6	216 (43.0)	230 (45.8)	56 (11.2)
Palpitation	0.37	0.6	362 (72.1)	94(18.7)	46 (9.2)
Shortness of breath	0.30	0.5	377 (75.1)	97 (19.3)	28 (5.6)
Pain during sexual intercourse	0.35	0.5	400 (79.7)	71 (14.1)	31 (6.2)
Constipation, diarrhea	0.55	0.6	276 (55.0)	183 (36.5)	43 (8.6)
Nausea	0.79	0.6	195 (38.8)	226 (45.0)	81(16.1)
Feeling tired	0.72	0.6	198 (39.4)	249 (49.6)	55 (11.0)
Sleep problems	0.54	0.6	290 (57.8)	154 (30.7)	58 (11.6)

The prevalence of severe anxiety and depression were 9.8% and 4.3%, respectively (Tab. III).

ASSOCIATED FACTORS OF SOMATIC SYMPTOMS

The results of univariate logistic regression analysis showed the significant association between age, marital status, education, occupational status, living condition, socio-economic status, anxiety and depression with somatic symptoms Results of multiple analyses showed that age was associated with somatic symptoms, significantly. The 71-90 years old people were 36.10 times more likely to have somatic symptoms than 10-30 years old one (p-value: 0.004), also 51-70 years old participants were 2.81 times more likely to have these symp-

Tab. III. The measures of central tendency and dispersion of anxiety and depression score and the Frequency of severity of anxiety and depression disorders in participants.

HADS questionnaire subscales	Mean	Standard Deviation	Median	Inter quartile range	Minimum	Maximum
Anxiety	7.20	4.9	7	7	0	21
Depression	5.72	4.8	4	8	0	21
	Classification Frequency (percent)					
	Normal		Mild		Moderate	Severe
Anxiety	278 (56.2)		97 (19.6)		71 (14.1)	49 (9.8)
Depression	321 (66.2)		65 (13.4)		78 (16.1)	21 (4.3)

Tab. IV. The associated factors of somatic symptoms using univariate and multivariate logistic regression.

Variable	OR	95% CI	OR	95% CI
Age group				
10-30 years	1.00	-	1.00	-
31-50 years	1.72	1.08-2.74	1.250	0.704-2.219
51-70 years	4.94	2.76-.87	2.817	1.240-6.401
71-90 years	18.68	3.91-89.29	36.101	3.192-408.238
Gender				
Male	1.00	-	1.00	-
Female	1.03	0.70-1.49	0.88	0.45-1.76
Marital status				
Single	1.00	-	1.00	-
Married	2.41	1.37-4.25	2.44	1.08-5.53
Divorced/Widowed	9.29	3.98-21.69	3.58	1.13-11.37
Education				
Illiterate or primary school	6.96	3.57-13.59	1.11	0.40-3.17
Secondary school	2.83	1.51-5.28	2.08	0.88-4.92
High school	1.52	0.92-2.49	1.16	0.59-2.30
University	1.00	-	1.00	-
Occupational status				
Housewife/Jobless	1.00	-	1.00	-
Government job	0.80	0.48-1.33	2.12	0.95-4.73
Non-government job	0.75	0.47-1.21	1.02	0.48-2.27
Retired	4.27	2.03-8.95	2.55	0.85-7.68
Living condition				
Urban	1.00	-	1.00	-
Rural	2.55	1.38-4.71	1.30	0.58-2.93
Socio-economic status				
Bad	3.53	1.92-6.49	1.178	0.487-2.850
Moderate	2.37	1.41-3.96	1.065	0.532-2.133
Good	1.31	0.76-2.22	0.793	0.395-1.592
Very good	1.00	-	1.00	-
Anxiety	1.19	1.19-1.26	1.14	1.06-1.22
Depression	1.18	1.13-1.23	1.11	1.04-1.19

toms (p-value: 0.013). The risk of somatic symptoms was 3.58 times more likely in Divorced/Widowed participants than single ones (p-value: 0.031). There were significant positive correlations between anxiety and depression scores. Each additional score of anxiety and depression were associated with 1.14 times more likely (p-value: <0.001) and 1.11 times less likely (p-value: 0.003) of having somatic symptoms, respectively (Tab. IV).

The correlations between the PHQ-15 items and anxiety and depression scores are described in Table V. All items of PHQ-15 have significant positive correlations with the anxiety and depression scores. Among different items "fainting spells" was most moderately correlated with anxiety score (r = 0.36) and "sleep problems" was most moderately associated with depression score (r = 0.41).

Tab. V. Correlations between PHQ-15 items and anxiety and depression scores.

Complaint	Anxiety score		Depression score	
	r	P-value	r	P-value
Stomach pain	0.32	< 0.001	0.30	< 0.001
Back pain	0.31	< 0.001	0.36	< 0.001
Pain in arms, legs, joints	0.17	< 0.001	0.13	0.006
Headache	0.25	< 0.001	0.17	< 0.001
Chest pain	0.24	< 0.001	0.34	< 0.001
Dizziness	0.31	< 0.001	0.24	< 0.001
Fainting spells	0.36	< 0.001	0.30	< 0.001
Palpitation	0.20	< 0.001	0.33	< 0.001
Shortness of breath	0.19	< 0.001	0.28	< 0.001
Pain during sexual intercourse	0.19	< 0.001	0.18	< 0.001
Constipation, diarrhea	0.20	< 0.001	0.16	< 0.001
Nausea	0.25	< 0.001	0.27	< 0.001
Feeling tired	0.25	< 0.001	0.28	< 0.001
Sleep problems	0.266	< 0.001	0.41	< 0.001

Discussion

Physicians in primary health care settings visit many patients with perplexing complaints. Often these people had multiple visits and various treatment but they are unsatisfied. Somatic complaints play as the junction between physical and psychosocial aspects of illness and health; accordingly, physicians must be learned regarding variant aspects of diseases.

In this study, the frequency of no, mild, moderate and severe levels of somatization were 23.7%, 42.6%, 20.5%, and 13.2%, respectively. The results of a similar study in Germany showed that the frequency of no, mild, moderate and severe levels of somatization in the general population in Germany was 46.8%, 38.3%, 11.8%, and 3.1%, respectively [14]. Our study showed prevalence of somatic symptoms in primary care is high and about 13.2% of patients had severe symptoms. Katon and colleagues introduced "The systems model of somatization" in the patient's socio-cultural background. These social and cultural factors were included in cultural attitudes regarding health and illness, illness behavior, and availability of health care facilities. Interaction between these factors could be affected demonstration of somatization in different groups [18]. On the other hand, Pain experience has inter-individual variability and many factors including genetic factors, ethnicity, age, and gender could affect it [19].

Previous studies in Asian societies have shown that somatic complaints may be an appropriate way for psychological distress presentation and help-seeking rather than direct expression [20]. Therefore it is not surprising, the prevalence of somatic complaints varies in different societies as 1.5 to 21.9% or even greater in the adult population [21].

In this study, most complaints were Pain in limbs, Stomach pain, headache, and nausea. In some of the researches, the most common symptoms were a pain in limbs and joints, GI symptoms and headache [22, 23]. According to our results older age, being divorced or widowhood, and having anxiety or depression were associated with somatization symptoms. There was no difference regarding kinds of somatic complaints based on genders. Glise demonstrated the nearly equal prevalence of somatic complaints in men and women [21]. The results of a review article demonstrated that women reported more frequently somatic symptoms then men. In addition mental disorders in women were greater than men [24]. Biological factors, more limitations in society, gender social roles and traditional social stressors may play a role in its differences [25].

Our results showed about 43.8% and 33.8% of respondents had some of degree of anxiety and depression respectively. The World Health Organization (WHO) estimated the lifetime prevalence of mental disorders ranged from 18.1 to 36.1% [26]. Based on the last Mental Health Survey of the Iranian Adult Population in 2015, somatic complaints and anxiety (29% for both) were greater than depression (10.39) [6]. This difference may be due to different setting, different questionnaire for detection of mental disorders and or study design [4]. The prevalence of mental disorders was notable in this study. The statistical society in this study was the patients who referred to the Clinics of Educational Hospitals; therefore the prevalence of mental disorders was higher than the total population. Also, changing economic situations in recent years could affect Iranian mental disorders.

WHO data demonstrated in the primary care setting about 70% of patients had diagnostic criteria for depression that present with somatic symptoms [27]. Since the psychosocial stressors could affect health, some of the researches were showed that anxiety and depression increase unexplained somatic complaints more than twice [28]. Depression and anxiety could because of somatic complaints. Mental disorders such as depression and anxiety are associated with a higher misperception of somatic complaints. Also, it may be the existence of depression or anxiety was causing more vulnerability to disease [22]. In other words, the somatic complaint may be a presentation of invisible mental disorders. Mental disorders were being affected by some of the variables such as age and marital status [5].

In present study, increasing of age was the one of important contributing factor, in somatic complaint presentation. Impaired of function, social network changes such as social withdrawn are associated with poor health in old age persons [29]. The results of this study showed that the age of more than 50-year-old is a significant predictor factor for somatization. The effect of age was maximized at the age of ≥ 70-year-old. The results of another similar study also showed the maximum score of somatization was observed in ≥70-year-old participants [14]. In late life, some of mental health disturbances (depression, dementia) could worsen and may be affect somatic complaint. Patient-doctor relation, also may be affected

by patient's age. This matter may be act as contributing factors in attention to patients' complaints [30].

In this study, the risk of somatic symptoms was 3.4 times more in Divorced/Widowed participants than single ones. There are different findings regarding the relationship between marriage and mental disorders, but one Epidemiologic Catchment Area (ECA) study revealed married men and women had the lowest depression than divorced men and women [31].

Anxiety also was similar. Loss of spouse and widowed has the high rate of stress and individual could be prone to mental disorders such as depression, Generalized Anxiety Disorders and panic disorders [32]. Our finding may be due to indirect effect of marital status on depression and anxiety.

Multiple somatic complaints that associated with psychiatric co morbidities are the large portion of burden of disease. It is expected, physician who had trained bio psychosocial -oriented have more appropriate approach to somatic complaints. Future researches regarding physicians' diagnostic ability and their therapeutic plan are advised.

There were significant positive associations between anxiety (OR: 1.14) and depression scores (OR: 1.11) with somatization in this study. The results of a large population study in Norway showed the strong association between anxiety, depression and somatic symptoms in both men and women [33]. Also, the results of a systematic review in women in low/middle income countries suggested a strong correlation between anxiety/depression and somatization (OR ranging 2.5-3.5). This association has multidimensional etiology including existence the risk factors for all mental diseases or being anxiety/depression as a risk factor for somatization [34]. This study has a number of limitations. We used self-report questionnaires, cross-sectional design and convenience sampling method. Limited sociodemographic data especially family and social support were other limitations of this study. These limitations could be a negative effect on the generalization of study.

Conclusion

With considering of results, having old age, being divorced or widow and suffering from anxiety or depression are moderately associated with somatization. Family physicians, psychiatrists, mental health workers and policy-makers should consider these predictive factors for primary prevention of somatization at the personal and community level, respectively. Physicians should consider the overlap syndrome between depression/anxiety and somatization in their primary care visits.

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Conflict of interest statement

The authors declare no conflict of interest.

Authors' contributions

BG and MD designed the study, RAboosaeidi performed the literature Searches and data gathering, Mina Danaei performed the statistics, and BehshidGarrusi and Mina Danaei wrote the manuscript. All authors commented on a first draft, contributed to and have approved the final manuscript.

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