



# Health Anxiety Disorder and Its Impact on Health Services Utilization: A Narrative Review Article

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## Review Article

### Abstract

Health anxiety disorder (HAD) is defined as anxiety about having a serious illness or fear of a serious illness, despite the assurances of doctors to the contrary. The purpose of this study was to review HAD, its diagnostic criteria, and its impact on health services utilization in a review article in 2018. For this aim, articles in ProQuest, ScienceDirect, PubMed, Scopus, Embase, and ISI Web of Science databases were selected without a publication time limit, and then, data on the nature, diagnostic criteria, and the effect of HAD on health services utilization were extracted. HAD is a relatively common disorder that persists in the absence of suitable management and results in excessive utilization of health services, avoidance of health care, and disruption of the function of individuals. Therefore, with early diagnosis, repetition of counseling, clinical trials, and the use of health services is avoidable and will prevent cost increases. Consequently it is better to have consensus on the diagnosis criteria of this disorder and, if diagnosed, the person is treated.

**Keywords:** Health anxiety disorder, Utilization, Health services utilization, Psychosomatic disorders

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### Introduction

With regard to the important role of health in people's lives, it is no surprise that most people have concerns about their health. Health concerns occupy most people, especially after experiencing unfamiliar

physical symptoms. This state of affairs is most commonly resolved and eliminated with the disappearance of symptoms or the assurances of doctors. However, in some cases, even though the evidence does not indicate a specific illness or problem, the patient's concern is not resolved and may even become more severe and lead to a phenomenon called health anxiety disorder (HAD) (Panahi, Asghari

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Moghadam, Shaeeri & Eghtedar Nejjad, 2010; Karimi, Homayuni, & Homayuni, 2015). HAD is a condition in which an individual interprets his symptoms or physical complaints as a serious illness. This disorder is often a spectrum that has mild concerns on the one hand, and on the other hand, fear and extreme anxiety about the health status and obsessive thoughts about physical sentiment. Health-related concerns may emerge both in people with disease and those who suffer from serious medical conditions and illnesses, leading to stimulation of people, and thus, further elucidated physical symptoms. To this end, different types of health and diagnostic services are used (Melli, Carraresi, Poli & Bailey, 2016; Hosseini Ghomi, Salimi Bajestani, & Zakeri, 2014; Abramowitz, Olatunji, & Deacon, 2007). People with various levels of HAD show different health services seeking behavior compared to those who are not affected by the disorder and their decision to utilize health services is altered. This decision may take the form of health services overutilization or avoidance of health services utilization. As a result, the differences in the treatment behavior of people with this disorder can have a significant effect on health services utilization (Koszegi, 2003; Nasri, Shakari & Haidari, 2015; Elshaug et al., 2017). This study aimed to understand HAD and its criteria, diagnostic criteria, and its effect on health services utilization.

## Methods

This narrative review study was conducted in 2018. This study was conducted by searching for the keywords "Anxiety", "Health Anxiety", "Hypochondriasis", "Health services utilization", "Health care utilization", and "Psychosomatic Disorder", in valid databases such as ProQuest, ScienceDirect, PubMed, Scopus, Embase, and ISI Web of Science. From among the 101 sources found according to the relationship with the topic of this study, 51 articles were selected. Then, data regarding the nature,

diagnostic criteria, and impact of HAD on health services utilization were extracted.

## Results

**Introduction to Anxiety Disorder:** One of the important factors leading to medical attention is complaints of physical symptoms. Some of these problems seem to be rooted in the psychological pressures of everyday life. Thus, in recent decades, new diseases have been identified as psychosomatic disorders that are associated with emotional and psychological factors. According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), psychosomatic disorders are a large group of diseases the physical signs of which constitute their main component, but the root cause of these diseases is psychological problems. Psychosomatic disorders fall into several major groups. One of these disorders in the group of Somatic Symptom and Related Disorders (SSD) is HAD or hypochondriasis. Although the DSM-5 mentions this disorder in the group of SSD, it is also referred to in the Illness Anxiety Disorder (IAD), which indicates that the core of the disorder is anxiety (Shabbeh, Feizi, Afshar, Hassanzade Kashtali, & Adibi, 2016; Noohi, 2013; Rahmaniyan, Sarvarian, & Zamani, 2016; American Psychiatric Association, 2013; Gropalis, Witthoft, Bailer, & Weck, 2018; Huang et al., 2016; Ahmadzadeh, Malekian, Afshar, Maroufi, Arbabi & Nejatisafa, 2012).

People with SSDs have multiple physical symptoms that affect their daily lives and are most often a strong sign of their pain. Symptoms may or may not be specific localized pain. These symptoms sometimes indicate a natural feeling of the body or discomfort that is generally not a sign of serious illness. Nevertheless, people with IAD continuously think about having a serious illness. In these cases, there are no bodily signs or very mild signs. The person has severe anxiety for his health and is easily excited about his health. These individuals

display excessive health behaviors, including excessive treatment behavior and avoidance behavior (American Psychiatric Association, 2013). Individuals with HAD may illustrate excessive curative behavior in order to ensure their health status. Such people, especially if they have illnesses, frequently use diagnostic tests and visit doctors at various specialized levels. These frequent and unproductive visits displease both the individual and doctors. Sometimes even a sense of frustration is felt by physicians or even the entire person's health system. Perhaps even the individual feels that doctors do not believe him/her or see his/her complaints as figments of his/her fancy. In contrast, some people avoid any action that exacerbates their health concerns. This behavior involves avoiding people (medical team, and friends or relatives with illness), avoiding places (hospitals and doctors' offices), and avoiding activities (taking into account medical advice, and thinking about death and illness) (Anderson, Saulsman, & Nathan, 2011).

An individual with hypochondriasis is actually afraid of being ill. A person with this disorder has a persistent urge to have or is unlikely to have a serious illness. Although concern may be due to a non-physical sign or symptom, an individual's discomfort is not primarily a physical complaint, but rather anxiety about the meaning, importance, or cause of a complaint. In other words, the person's concern is that he may be diagnosed with a disease. If there is a physical sign or physical symptom, often a natural physiological sensation such as dizziness, or a physical discomfort that usually does not signify the presence of a disease, is caused in the individual. If there is a recognizable medical condition, the anxiety and mental involvement of the individual are clearly extreme and disproportionate to the severity of the disease. People who have been diagnosed as hypochondriasis according to previous version of DSM, now are categorized mostly as Somatic Symptom Disorder and sometimes as HAD cases in the

DSM 5. Therefore, if the symptoms are not noticeable and anxiety is severe, the person has HAD, and if the symptoms are severe but anxiety is low, the patient suffers from Somatic Symptom Disorder (Hosseini Ghomi et al., 2014; Abramowitz et al., 2007, American Psychiatric Association, 2013; Weck, Richtberg, & Neng, 2014).

Hypochondriasis is not merely a psychological disorder that involves health-related concerns. Additionally, self-diagnosis depends on the observation of the DSM criteria, while the spectrum of health anxiety involves both continuous and mild-to-relational anxiety concerns and fleeting concerns until the complete diagnosis of hypochondriasis. In recent years, this problem has been addressed by psychiatric health professionals to a large extent because, according to the advice of these professionals, it is better to use the term health anxiety to diagnose this disorder, and only use the term hypochondriasis in the case of an extreme HAD. Therefore, there are many reasons to extend the continuous measurement of health anxiety, which indicates that the scales used for this measurement should be sensitive to normal levels of health concerns as well as hypochondriasis (Hart & Bjorgvinsson, 2010; Salkovskis, Rimes, Warwick, & Clark, 2002; Bobevski, Clarke, & Meadows, 2016).

HAD is usually characterized by anxiety and fear of having a serious illness. The disorder may be seen in a healthy person, in a person experiencing symptoms without medical justification, or in someone who is really ill. In people with a disease, such concerns are adaptive and cause them to pay particular attention to their physical symptoms so that they can treat any symptoms they may have. In other cases, severe physical health concerns occur in the absence of any clear symptoms of disease, such as when people find that they are ill on the basis of a misinterpretation of their physical symptoms. However, the relationship of health anxiety with the

presence of any non-communicable disease has not yet been proven. These thoughts are usually reinforced by mental and emotional imagery, and thus, people experience anxiety with continuous health (Karimi et al., 2015; Weck et al., 2014; Sunderland, Newby, & Andrews, 2013; Dibajnia, Panahi, & Moghadasin, 2012; Deirdre Kehler, 2006).

In general, there are several theories for HAD:

- Psychodynamic theory
- Biological theory
- Behavioral theory
- Cognitive-behavioral theory

Researchers believe that the cognitive-behavioral theory of health anxiety specifically contains useful information that illustrates its underlying (vulnerabilities), revealing, continuing, and exacerbating factors. This model has also been empirically verified (Deirdre Kehler, 2006). The cognitive-behavioral theory (CBT) about HAD shows that the mild form of this disorder is more common among ill people or those who are worry about their health in a long term. In addition, severe anxiety has prolonged and significant effects on individual performance, and in its severe and enduring form, it affects individuals' quality of life (QOL) and ability to work, and may even have the risk of dismissal from work and disabilities (Hosseini Ghomi et al., 2014; Fink, Ornbol, & Christensen, 2010; Tang, Salkovskis, Poplavskaya, Wright, Hanna, & Hester, 2007; Eilenberg, Hoffmann, Jensen, & Frosthalm, 2017; Hedman et al., 2011).

HAD is rarely recognized in clinical studies because it is considered as a secondary illness or condition for other psychiatric disorders. Evidence suggests that multiple physical symptoms or concerns about diseases may be related to the disorder and are very debilitating if this disorder is accompanied by other mental disorders. Therefore, the diagnosis of health anxiety is necessary to prevent severe disabilities (Bobevski et al., 2016; Fink et al., 2010, Newby, Mahoney, Mason, Smith, Uppal, & Andrews, 2016;

Hadjistavropoulos & Lawrence, 2007).

**Criteria for diagnosis of health anxiety disorder:** The DSM-5 diagnostic criteria for HAD include:

1. Continuous thinking about having a serious illness
2. The absence of physical symptoms (If physical signs are present, they are very mild. In the case of a previous illness in the person, there is a great likelihood of other medical conditions.)
3. Lack of certainty about the results of the treatment and the doctor's affirmation of the patients' health
4. Severe health concern easily led to distress and fear regarding health
5. Great concern about a particular disease that had already existed in the individual's family
6. Great concern about the illnesses that make it hard for the individual to work
7. Repeated searching for some of its physical symptoms on the Internet
8. Exhibition of severe health-related behaviors (such as controlling and testing physical symptoms) or abnormal avoidance of certain situations (such as avoiding referral to a doctor and hospital)

Based on the criteria of the Diagnostic Criteria for Psychosomatic Research (DCPR), HAD is classified as "Abnormal Illness Behavior (AIB)" and the following criteria are used to identify it:

- General concerns about illness, concern about pain, and addressing physical symptoms (desire to exaggerate physical sentiment) for at least six months
- Concerns and fears that are even triggered by the confidence of the medical group, maybe even after a while new concerns arise (Porcelli & Rafanelli, 2010).

HAD has two forms:

- Health service seeking behavior: Too frequent usage of medical and diagnostic services, including visiting physicians or performing diagnostic tests
- Avoiding Health Services: Avoiding Getting Health Care (American Psychiatric

Association, 2013).

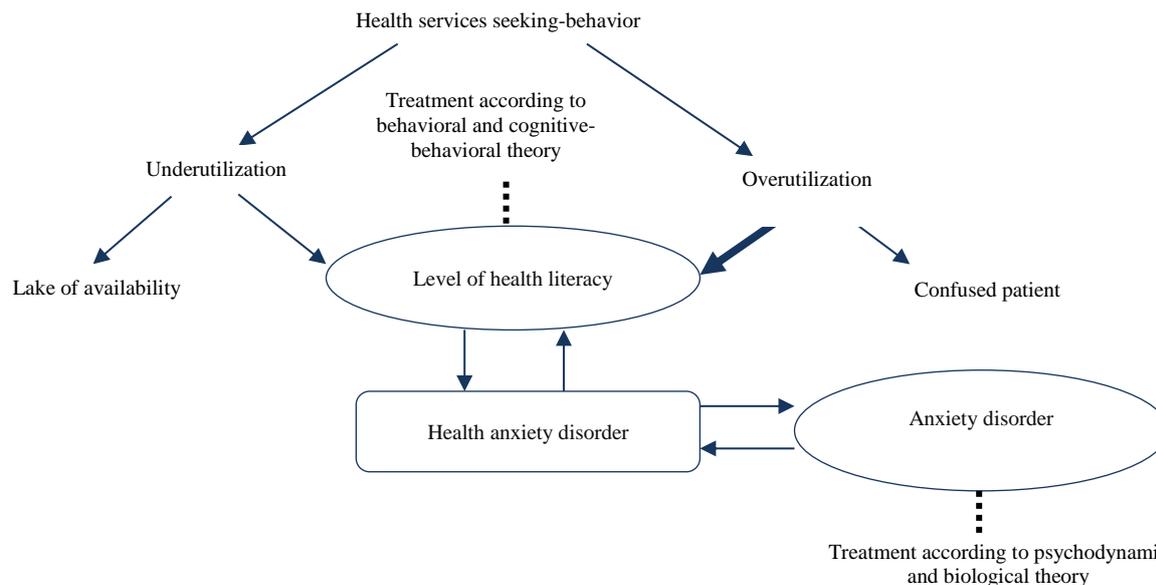
Many studies have pointed out that there are no significant gender differences in the incidence of health anxiety; it also seems that there is little relation between demographic variables such as level of education, social status, and marital status and this disorder. However, based on these studies, physical symptoms disorder has a direct correlation with health anxiety. Physical symptoms include one or more physical symptoms that are annoying and excessive thinking, emotions, or behaviors that are related to physical symptoms caused by health concerns. Physical symptoms are more common in patients with severe HAD or hypochondriasis than in others. About 20 percent of people whom received first level of healthcare services and experienced bodily syndromes might have HAD. People who suffer from physical impairment and health anxiety are subject to poor physical health, increasing disability, excessive use of health care, and dissatisfaction and discontent with physicians' interpretation of their symptoms and disease management. Therefore, in this situation, the relationship between the patient and the physician will be confused (American Psychiatric Association, 2013; Lee, Creed, Ma, & Leung, 2015; Solem, Borgejordet, Haseth, Hansen, Haland, & Bailey, 2015; Shahidi, Molaie, & Dehghani, 2012; Toussaint, Lowe, Brahler, & Jordan, 2017).

**Approach to health anxiety disorder in the health services seeking-behavior:** In some health systems around the world, when there is no referral system, people who have good access to health care are encouraged to increase their use of health services. This is particularly the case with insurance, low cost of receiving services, or free services, such as services provided to covered individuals at the social assistance centers of the Social Security Agency. In such a situation, consumers are not motivated to save money on the use of services because they do not incur all medical expenses, and this will lead to moral hazard (Keshavarz & Zomorodi

Anbaji, 2010). Therefore, there are several reasons for using health services more than needed or less than needed that should be distinguished from the category of health anxiety. In addition to a form of health anxiety that is treated as avoidance of care, there are many other factors that can lead to lack of access to health care. One of the factors that lead to avoiding care is the lack of access to affordable services. Geographic, financial, and physical access are determinants of whether people are benefiting or not benefiting from health services, and individuals' reluctance to receive health services may be due to lack of access to them in various ways (Rezapoor et al., 2015).

The next factor that can be considered in receiving or avoiding health care is the health literacy of individuals. Health literacy refers to the individual's capacity to obtain, interpret, and understand the basic information that is appropriate for deciding on health services. It also includes a set of reading, listening, analysis, and decision making skills and their ability to apply these skills in different situations, which do not necessarily correlate with their degree.. Although it is still unclear how health literacy affects health outcomes, there are many reasons that health status, hospitalization, self-care skills, preventive care, and inappropriate use of health services are greatly impacted by the health literacy of people. Indeed, a low level of health literacy can lead to undesirable physical and mental health that affects the quality of health care services, especially if someone is struggling with disabling circumstances, such as anxiety disorders. Therefore, moral hazards, access, severe illnesses and health literacy are among the factors affecting the inappropriate use of health services, and when considering HAD, these items should be rolled out. (Reisi, Mostafavi, Hasanzadeh, & Sharifirad, 2011).

Figure 1 depicts different types of inappropriate healthcare seeking behavior, the factors affecting it, and the proposed treatment method for each one.



**Figure 1.** Types of inappropriate treatment-related behaviors that affect the inappropriate treatment behavior and the way each one treats them

Various studies suggest that, in contrast to people who use health services more than usual because of HAD, some people refrain from receiving any specialized medical care by showing avoidance behaviors. This problem can reduce the level of anxiety in the short term, but may have long-term irreversible effects on the individual and society. Therefore, identifying people with this form of HAD can reduce irreparable complications for the health of the individual and society in the long run (Anderson et al., 2011). Various studies have suggested that patients with anxiety disorders, especially at high levels, are significantly more likely to use all types of health care, especially if their access to healthcare is facilitated by insurance coverage and other factors, than those who have a real medical condition and have a good health record. The burden of health anxiety is significant for the community and individual, and it leads to an increase in the rate of use of general or specialized health services. People with health anxiety may seek to see physical symptoms even at mild levels, seek screening tests, diagnostic tests, referral to doctors at various levels of expertise, and the use of paraclinical services. In these cases, their concern, even after consultation with

the doctor, may still be at high levels and, by repeating tests and referrals to the doctor, may result in high medical expenses (Fink et al., 2010; Shahidi et al., 2012; Scott, Mackenzie, Chipperfield, & Sareen, 2010; El-Gabalawy, Mackenzie, & Sareen, 2016; Roberge, Fournier, Duhoux, Nguyen, & Smolders, 2011; Rimes & Salkovskis, 2002).

Patients also exhibit protective behaviors designed to reduce health anxiety, such as avoiding information related to illness or seeking to ensure their health through clinical guidelines and body checks. However, in the long run, these behaviors may intensify and add to the severity of HAD, instead of reducing its severity (Hadjistavropoulos & Lawrence, 2007).

Individuals with health anxiety may not only reveal an abnormal set of behavioral patterns of response to disease information, but may also act inadequately and ineffectively in the use of protective anxiety strategies. This issue in people with health anxiety may have a negative effect on their satisfaction with the advice of the physician. Some people with health anxiety may be reluctant to seek medical advice and receive diagnostic and therapeutic services, especially mental health services, in the face

of their physical symptoms. Some people also avoid referrals because of fear. Others may also prefer not to see a physician to get assurance about their physical condition, and only consider their relatives' comments.. While the cognitive-behavioral theory of health anxiety anticipates active avoidance behavior in relation to disease-related information, the question is whether people with health anxiety use cognitive strategies of suppression and distraction during exposure to information related to the disease. They remain in ambiguity and uncertainty. Such strategies are ineffective and may lead to excessive use of healthcare through deterioration (Weck et al., 2014; Tanis, Hartmann, & Te, 2016; Hadjistavropoulos, Craig, & Hadjistavropoulos, 1998; Issakidis & Andrews, 2002).

Given that health services are currently provided for people with physical and psychological illnesses, not for people with unexplained physical symptoms or health anxiety, excessive use of care services heavily influences health in contemporary times. In addition, health anxiety at its extreme levels has led to economic burden and significant negative effects on the individual and society. Furthermore, the use of the health care system at different levels of health care services (such as frequent visits to professionals, medical tests, unnecessary hospitalizations, and the use of medications) will increase if this disorder intensifies. In the hypochondriasis, which is a vigorous form of health anxiety, radical estimates of the medical conditions tends to medical service overuse, all of which in turn create high health care costs. Therefore, trying to cure this issue is important (Abramowitz et al., 2007; Elshaug et al., 2017; Bobevski et al., 2016; Prochaska, Le, Baillargeon, & Temple, 2016).

## Conclusion

Investigating research related to the present study showed that HAD and its severe form, hypochondriasis, are relatively common disorders that persist in chronic non-

treatment and lead to overutilization of the health care system and disruptions in the daily routine of people. Moreover, this disorder can have a significant impact on the QOL of individuals. These characteristics have caused HAD and hypochondriasis to impose many costs on the health system and society (Panahi et al., 2010; Karimi et al., 2015).

Regarding the high prevalence of psychological disorders, there are several valid instruments for measuring anxiety disorder that are based on the criteria of the DSM-4 and DSM-5 and cognitive-behavioral theories. Among these tools, the Health Anxiety Inventory-Short Form (HAI-SF) is a useful tool for measuring this disorder among different demographic groups. Although the study of health anxiety disorder among patients and hypochondriasis cases is important, but its review in other samples seems to be effective in assessing how they benefit from health care services. (Elshaug et al., 2017; Dibajnia et al., 2012).

Given that people's strong concerns about their health status are not usually overcome by reassurance,, over time, the concerns of individuals have been transferred from one disease to another, and ultimately, have created many problems for the individual, family, and health system. However, studies have shown that this disorder can be effectively treated with the use of psychotherapeutic interventions and cognitive-behavioral interventions. Moreover, if health concerns and the likelihood of them are diagnosed as anxiety in the early stages, repeated counseling, clinical trials, and other health care services and their economic burden on the limited resources available to the health sector can be avoided. Besides, given that the funds allocated to the health sector are limited, there is a need for consensus on the diagnostic criteria of this disorder. Evidently, the timely detection of this disorder and its prevention will lead to the efficient management of health care resources and

prevent financial risks for consumers and healthcare providers (Lung-Cheng, Ho, Weng, Hsu, Wang, & Wu, 2015; Saneei et al., 2016).

### Conflict of Interests

Authors have no conflict of interests.

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### References

- Abramowitz, J. S., Olatunji, B. O., & Deacon, B. J. (2007). Health anxiety, hypochondriasis, and the anxiety disorders. *Behav. Ther.*, 38(1), 86-94. doi:S0005-7894(06)00071-2 [pii];10.1016/j.beth.2006.05.001 [doi]. Retrieved from PM:17292697
- Ahmadzadeh, G., Malekian, A., Afshar, H., Maroufi, M., Arbabi, M., & Nejatisafa, A. (2012). History and models of psychosomatic medicine and a brief review of its current status in Iran and Germany. *J Res Behave Sci*, 9(5), 420-431.
- American Psychiatric Association. (2013). *Somatic symptom and related disorders, Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. 5<sup>th</sup> ed. Washington, DC: American Psychiatric Association, 2013. p. 309-20.
- American Psychiatric Association. (2013). *DSM-5 Classification, Somatic symptom disorder, Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. 5<sup>th</sup> ed. Washington, DC: American Psychiatric Association, 2013. p. xx-xxi.
- American Psychiatric Association. (2013). *Illness anxiety disorder, Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*. 5<sup>th</sup> ed. Washington, DC: American Psychiatric Association, 2013. p. 316-320.
- Anderson, R., Saulsman, L., & Nathan, P. (2011). *Helping health anxiety*. Perth, Western Australia: Centre for Clinical Interventions.
- Bobeviski, I., Clarke, D. M., & Meadows, G. (2016). Health anxiety and its relationship to disability and service use: findings from a large epidemiological survey. *Psychosom. Med.*, 78(1), 13-25. doi:10.1097/PSY.0000000000000252 [doi]. Retrieved from PM:26588821
- Deirdre Kehler, M. (2006). *What role does health anxiety play in coping with MS? An exploratory internet-based study*. Wascana Pkwy, Regina, Canada: University of Regina.
- Dibajnia, P., Panahi, S., Moghadasin, M. (2012). Evaluation health anxiety in patients that refer to internal clinics. *Journal of Educational Psychology, Islamic Azad University Tonekabon Branch*, 4(1), 91-97.
- Eilenberg, T., Hoffmann, D., Jensen, J. S., & Frostholm, L. (2017). Intervening variables in group-based acceptance & commitment therapy for severe health anxiety. *Behav. Res Ther.*, 92, 24-31. doi:S0005-7967(17)30016-5 [pii];10.1016/j.brat.2017.01.009 [doi]. Retrieved from PM:28196772
- El-Gabalawy, R., Mackenzie, C. S., & Sareen, J. (2016). Mental health service use among older Canadians with anxiety and comorbid physical conditions. *Aging Ment. Health*, 20(6), 627-636. doi:10.1080/13607863.2015.1033678 [doi]. Retrieved from PM:25897560
- Elshaug, A. G., Rosenthal, M. B., Lavis, J. N., Brownlee, S., Schmidt, H., Nagpal, S. et al. (2017). Levers for addressing medical underuse and overuse: achieving high-value health care. *Lancet*, 390(10090), 191-202. doi:S0140-6736(16)32586-7 [pii];10.1016/S0140-6736(16)32586-7 [doi]. Retrieved from PM:28077228
- Fink, P., Ornbol, E., & Christensen, K. S. (2010). The outcome of health anxiety in primary care. A two-year follow-up study on health care costs and self-rated health. *PLoS. One.*, 5(3), e9873. doi:10.1371/journal.pone.0009873 [doi]. Retrieved from PM:20352043
- Gropalis, M., Witthoft, M., Bailer, J., & Weck, F. (2018). Optimizing exposure therapy for pathological health anxiety: Considerations From the inhibitory learning approach. *Cognitive and Behavioral Practice*, 25(2), 250-260.
- Hadjistavropoulos, H. D., Craig, K. D., & Hadjistavropoulos, T. (1998). Cognitive and behavioral responses to illness information: The role of health anxiety. *Behav. Res Ther.*, 36(2), 149-164. doi:S0005-7967(98)00014-X [pii]. Retrieved from PM:9613022
- Hadjistavropoulos, H., & Lawrence, B. (2007). Does anxiety about health influence eating patterns and shape-related body checking among females? *Pers Individ Dif*, 43(2), 319-328.
- Hart, J., & Bjorgvinsson, T. (2010). Health anxiety and hypochondriasis: Description and treatment issues highlighted through a case illustration. *Bull. Menninger Clin.*, 74(2), 122-140. doi:10.1521/bumc.2010.74.2.122 [doi];10.1521/bumc.2010.74.2.122 [pii]. Retrieved from PM:20545492
- Hedman, E., Andersson, G., Andersson, E., Ljotsson, B., Ruck, C., Asmundson, G. J. et al. (2011). Internet-based cognitive-behavioural therapy for severe health anxiety: randomised controlled trial. *Br J Psychiatry*, 198(3), 230-236. doi:S0007125000254524

[pii];10.1192/bjbp.bp.110.086843 [doi]. Retrieved from PM:21357882

Hosseini Ghomi, T., Salimi Bajestani, H., & Zakeri, N. (2014). Relationship religious orientation and hope with health anxiety among women nurses in Imam Khomeini hospital of Tehran. *Iran J Nurs Res*, 9 (1), 17-24.

Huang, W. L., Chen, T. T., Chen, I. M., Ma, H. M., Lee, M. T., Liao, S. C. et al. (2016). Depression and anxiety among patients with somatoform disorders, panic disorder, and other depressive/anxiety disorders in Taiwan. *Psychiatry Res*, 241, 165-171. doi:S0165-1781(16)30793-4 [pii];10.1016/j.psychres.2016.05.008 [doi]. Retrieved from PM:27179181

Issakidis, C., & Andrews, G. (2002). Service utilisation for anxiety in an Australian community sample. *Soc Psychiatry Psychiatr Epidemiol*, 37(4), 153-163.

Karimi, J., Homayuni, N. A., & Homayuni, N. F. (2015). Evaluation of Psychometric Properties of the Health Anxiety Inventory. *Hakim Health Sys Res*, 17(4), 297-305.

Keshavarz, G., & Zomorodi Anbaji, M. (2010). Analysis of adverse selection and moral hazard in health insurance of Iran case study of medicine and paraclinical services. *Journal of Economic Research*, 44(2), 139-163.

Koszegi, B. (2003). Health anxiety and patient behavior. *J Health Econ.*, 22(6), 1073-1084. doi:S0167-6296(03)00076-6 [pii];10.1016/j.jhealeco.2003.06.002 [doi]. Retrieved from PM:14604561

Lee, S., Creed, F. H., Ma, Y. L., & Leung, C. M. (2015). Somatic symptom burden and health anxiety in the population and their correlates. *J Psychosom.Res*, 78(1), 71-76. doi:S0022-3999(14)00392-4 [pii];10.1016/j.jpsychores.2014.11.012 [doi]. Retrieved from PM:25466323

Lung-Cheng, H. C., Ho, C. H., Weng, S. F., Hsu, Y. W., Wang, J. J., & Wu, M. P. (2015). The association of healthcare seeking behavior for anxiety and depression among patients with lower urinary tract symptoms: A nationwide population-based study. *Psychiatry Res*, 226(1), 247-251. doi:S0165-1781(15)00020-7 [pii];10.1016/j.psychres.2014.12.056 [doi]. Retrieved from PM:25623018

Melli, G., Carraresi, C., Poli, A., & Bailey, R. (2016). The role of metacognitive beliefs in health anxiety. *Pers Individ Dif*, 89, 80-85.

Nasri, M., Shakari, N. A., & Haidari, S. (2015). To Examine the CT scan services prescription status of insured of Iran Health Insurance Organization and its costs in zone 4 of country in first half of 2012. *J Ilam Univ Med Sci*, 23(2), 68-77.

Newby, J. M., Mahoney, A. E. J., Mason, E. C., Smith, J., Uppal, S., & Andrews, G. (2016). Pilot trial of a therapist-supported internet-delivered cognitive behavioural therapy program for health anxiety.

*Internet Interv*, 6, 71-79.

Noohi, S. (2013). Psychosomatic medicine. *Educational Quarterly Journal of Medical School of Baghiyatallah Medical University*, 13(82), 1-5.

Panahi, S., Asghari Moghadam, M. A., Shaeeri, M. R., & Eghtedar Nejjhad, S. (2010). Psychometric properties of a Persian version of the short form of health anxiety inventory in non-clinical Iranian populations. *Quarterly of Educational Measurement*, 1(2), 21-46.

Porcelli, P., & Rafanelli, C. (2010). Criteria for psychosomatic research (DCPR) in the medical setting. *Curr.Psychiatry Rep.*, 12(3), 246-254. doi:10.1007/s11920-010-0104-z [doi]. Retrieved from PM:20425288

Prochaska, J. D., Le, V. D., Baillargeon, J., & Temple, J. R. (2016). Utilization of Professional Mental Health Services Related to Population-Level Screening for Anxiety, Depression, and Post-traumatic Stress Disorder Among Public High School Students. *Community Ment.Health J*, 52 (6), 691-700. doi:10.1007/s10597-015-9968-z [doi];10.1007/s10597-015-9968-z [pii]. Retrieved from PM:26733335

Rahmaniyan M, Sarvarian Z, & Zamani M. (2016). Comparison between the effectiveness of music therapy and neurofeedback on psychosomatic disorder pain relief. *Journal of Neuropsychology*, 2(4), 45-56.

Reisi, M., Mostafavi, F., Hasanzadeh, A., & Sharifirad, G. (2011). The relationship between health literacy, health status and healthy behaviors among elderly in Isfahan. *J Health Syst Res*, 7(4), 469-480.

Rezapoor, A., Roumiani, Y., Ebadifard azar, F., Ghazanfari, S., Mirzaei, S., Sarabi asiabar, A. et al. (2015). Effective Factors on Utilization and Access to Health Care: A Population-Based Study in Kerman. *J Health Adm*, 18(60), 24-36.

Rimes, K. A., & Salkovskis, P. M. (2002). Prediction of psychological reactions to bone density screening for osteoporosis using a cognitive-behavioral model of anxiety. *Behav Res Ther*, 40(4), 359-381.

Roberge, P., Fournier, L., Duhoux, A., Nguyen, C. T., & Smolders, M. (2011). Mental health service use and treatment adequacy for anxiety disorders in Canada. *Soc.Psychiatry Psychiatr.Epidemiol.*, 46(4), 321-330. doi:10.1007/s00127-010-0186-2 [doi]. Retrieved from PM:20217041

Salkovskis, P. M., Rimes, K. A., Warwick, H. M., & Clark, D. M. (2002). The Health Anxiety Inventory: Development and validation of scales for the measurement of health anxiety and hypochondriasis. *Psychol.Med*, 32(5), 843-853. Retrieved from PM:12171378

Saneei, P., Hajishafiee, M., Esmailzadeh, A., Hassanzadeh Keshteli, A., Roohafza, H. R., Afshar, H. et al. (2016). The association between healthy lifestyle with depression and anxiety among adults in Esfahan. *J Guilan Univ Med Sci*, 25(99), 69-81.

Scott, T., Mackenzie, C. S., Chipperfield, J. G., & Sareen, J. (2010). Mental health service use among Canadian older adults with anxiety disorders and clinically significant anxiety symptoms. *Aging Ment.Health, 14*(7), 790-800. doi:924384406 [pii];10.1080/13607861003713273 [doi]. Retrieved from PM:20635231

Shabbeh, Z., Feizi, A., Afshar, H., Hassanzade Kashtali, A., & Adibi, P. (2016). Identifying the profiles of psychosomatic disorders in an Iranian Adult population and their relation to psychological problems. *J Mazand Univ Med Sci, 26*(137), 82-94.

Shahidi, S., Molaie, A., & Dehghani, M. (2012). relationship between health anxiety and alexithymia in an Iranian sample. *Procedia Soc Behav Sci, 46*, 591-595.

Solem, S., Borgejordet, S., Haseth, S., Hansen, B., Haland, A., & Bailey, R. (2015). Symptoms of health anxiety in obsessive-compulsive disorder: Relationship with treatment outcome and metacognition. *J Obsessive Compuls Relat Disord, 5*, 76-81.

Sunderland, M., Newby, J. M., & Andrews, G. (2013). Health anxiety in Australia: Prevalence, comorbidity, disability and service use. *Br J Psychiatry, 202*(1), 56-61. doi:S0007125000273212 [pii];10.1192/bjp.bp.111.103960 [doi]. Retrieved from

PM:22500013

Tang, N. K., Salkovskis, P. M., Poplavskaya, E., Wright, K. J., Hanna, M., & Hester, J. (2007). Increased use of safety-seeking behaviors in chronic back pain patients with high health anxiety. *Behav.Res Ther., 45*(12), 2821-2835. doi:S0005-7967(07)00108-8 [pii];10.1016/j.brat.2007.05.004 [doi]. Retrieved from PM:17588530

Tanis, M., Hartmann, T., & Te, P. F. (2016). Online health anxiety and consultation satisfaction: A quantitative exploratory study on their relations. *Patient Educ.Couns., 99*(7), 1227-1232. doi:S0738-3991(16)30042-8 [pii];10.1016/j.pec.2016.01.021 [doi]. Retrieved from PM:26873545

Toussaint, A., Lowe, B., Braehler, E., & Jordan, P. (2017). The Somatic Symptom Disorder - B Criteria Scale (SSD-12): Factorial structure, validity and population-based norms. *J Psychosom.Res, 97*, 9-17. doi:S0022-3999(17)30051-X [pii];10.1016/j.jpsychores.2017.03.017 [doi]. Retrieved from PM:28606504

Weck, F., Richtberg, S., & Neng, J. M. B. (2014). Epidemiology of hypochondriasis and health anxiety: Comparison of different diagnostic criteria. *Curr Psychiatry Rev, 10*(1), 14-23.