

CHAPTER 2

ETIOLOGICAL FACTORS

There has been considerable speculation over the years about the etiology of health anxiety and somatization and it is only in recent years that more solid evidence has become available. Clients with health anxiety often wish to understand why their problem developed. Clinicians find that having an understanding of the development of a problem is helpful in developing interventions. Researchers study etiology in order to develop more effective approaches to treatment and, ultimately, prevention. Fortunately, what we have learned from the extensive research about the etiology of mood and anxiety disorders is helpful in our understanding of health anxiety. There is also a developing literature looking specifically at the etiology of health anxiety and somatization.

A number of etiological factors have been the focus of research: genetic factors, family background and childhood experiences, stressful life events, and sociocultural factors.

GENETIC FACTORS

The findings of large-scale genetic studies of mental disorders have increased our understanding of the familial transmission of behavioral characteristics associated with mental disorders. A group working with the Virginia Twin Study (Kendler et al., 1995) found a significant genetic contribution to dimensional measures of somatization and panic-phobia.

The latter factor is often closely related to health anxiety. The genetic effects were significant for both factors, accounting for between 25% and 49% of the total variance. Familial environment effects were absent for symptoms of somatization, and for symptoms of panic-phobia they accounted for only a very small proportion of the variance in males and a modest proportion in females. The authors indicate that their findings were consistent with previous genetic studies that suggest that environmental effects on behavioral traits arise from environmental experiences not shared by other family members.

Gillespie, Zhu, Heath, Hickie, and Martin (2000) describe a study examining the Australian Twin Register. Information was gathered from 3,469 respondents (age 18–28) using dimensional measures of anxiety, depression, and somatization. Multivariate genetic analysis indicated that an additive genetic and non-shared environment model best explained the covariation among the three factors. The genetic factors accounted for approximately 30% of the variance in somatization scores. Approximately 10% of the genetic variance was due to a specific factor for somatization not overlapping with genetic contributions to anxiety and depression. They also estimated that 74% of the individual environmental influence on somatization was unrelated to depression or phobic anxiety. These results were similar to previous findings that there are unique genetic and environmental factors associated with symptoms of chronic fatigue (Hickie, Kirk, & Martin, 1999).

FAMILY BACKGROUND AND CHILDHOOD EXPERIENCES

Noyes, Holt, Happel, Kathol, and Yagla (1997) recruited 19 families of probands with hypochondriasis and 24 families of probands without hypochondriasis. There were few differences between the groups in frequency of lifetime psychiatric diagnoses, except there were higher rates of abridged somatization (18.1% vs. 10.3%) and generalized anxiety disorder (9.7% vs. 3.1%) among family members of probands with hypochondriasis. The family members of probands with hypochondriasis did not have a significantly higher rate of hypochondriasis (12.5% vs. 9.3%) but current anxiety disorders were more common (26.4% vs. 15.5%). The family groups did not differ on dimensional measures of hypochondriacal concern. Relatives of hypochondriacal probands reported a less favorable attitude toward doctors, poorer response to treatment, and less satisfaction with health care. They scored lower on personality dimensions of agreeableness and conscientiousness and higher on the alexithymic dimension (difficulty expressing feelings). There were no statistically

significant differences between the groups in terms of medical history. The findings of this study do not suggest that hypochondriasis runs in families, although they do indicate a possible family association in terms of anxiety disorders, somatization, and certain personality characteristics.

In an extension of this study, Noyes, Happel, and Yagla (1999) described the childhood experiences of a non-clinical sample of relatives who met full ($n = 16$) or possible ($n = 5$) criteria for hypochondriasis in comparison to the experience of relatives who did not meet the criteria ($n = 145$). Those with hypochondriasis reported significantly higher levels of poor physical health (22.2% vs. 3.3%) and phobia (50% vs. 19.2%) during childhood. A number of other childhood experiences were at least twice as common among those with hypochondriasis (serious illness or injury, restricted activity due to health problems, parental neglect, and sexual abuse), but these differences did not reach statistical significance, possibly because of the limited sample size.

The South London Somatization Study in England considered the influence of early life experience on somatization (Craig, Boardman, Mills, Daly-Jones, & Drake, 1993). All patients presenting in primary care for the first time with a recent health concern were screened for psychiatric symptoms and health problems. Participants were divided into four categories: Physical (physical disorder only, $n = 90$), Psychologizers (psychiatric disorder presenting with psychological complaints, $n = 11$), Somatizers (psychiatric disorder presenting with physical complaints but functional diagnosis only, $n = 44$); and Mixed (psychiatric disorder presenting with physical complaints with resulting organic diagnosis, $n = 39$). The Somatizer group reported considerably higher levels of physical illness before the age of 17 (55% vs. 15 to 20% in the other groups), parental illness before the age of 17 (41% vs. 9 to 23% in the other groups), and lack of parental care (34% in Somatizer group, 36% in Psychologizer group, below 14% in other two groups). Events involving loss without lack of parental care were reported at a rate of 18–20% in the three groups with psychiatric disorder but only 11% of those with physical disorder. Participants were followed over time and the authors found that those with Physical or Mixed disorders recovered more quickly from the presenting complaint, while the Somatizers improved more slowly. At follow-up, 36% of the Somatizer group continued to experience the index symptoms and 27% now met the criteria for some type of somatoform disorder (four had somatization disorder, six hypochondriasis, four undifferentiated somatoform disorder, and two functional pain disorder). Logistic regression analyses indicated that there were independent contributions to somatization from childhood illness and lack of care (caused at times by parental illness).

Craig, Cox, and Klein (2002) recruited groups of mothers with children ageing from four to eight. The Somatizer group ($n = 48$) consisted of mothers with chronic symptoms typical of undifferentiated somatoform disorder (most commonly cardiovascular, gastrointestinal, neurological symptoms, and pain symptoms affecting one or two body systems). The Organic group ($n = 51$) included mothers with chronic health conditions such as arthritis, diabetes with complications, poorly controlled epilepsy, and asthma. The Healthy group ($n = 52$) was recruited in the same health care setting from a random sample of women who did not have any chronic health condition. The Somatizer group reported higher levels of health anxiety and more difficulty in accepting their illness than the Organic group. Mothers in the Somatizer group reported higher levels of childhood adversity than those in the other two groups, including lax supervision, parental indifference, physical abuse, and sexual abuse. The Somatizer group also reported substantially more experiences with illness before age 17 (family members or their own).

This study also gathered information from the mother on the health of the child. Mothers in the Somatizer group were more likely to regard their child as “sickly” as an infant than those in the other two groups (25% vs. 9%) and reported more physician visits for their child in the previous year (7.4) than the other two groups (in the range of four visits). Children of mothers in the Somatizer group were more likely to have missed some school due to illness during the previous term (70% vs. 45%). Among those whose children missed school, mothers in the Somatizer group were less likely than those in the other two groups to describe objective signs of illness, such as fever, and more likely to describe vague symptoms, such as looking unwell or being lethargic (36% vs. 11%). Reports of children’s symptoms during the previous three months indicated that children of the Somatizer group did not have more common childhood infections but they did have a substantially higher number of symptoms often seen as functional—headaches, stomachaches, other pains, and fatigue. The authors explored which factors might be related to children’s worries about health and somatic expression of emotion and found that the mother’s somatization status, organic health problems, and history of childhood adversity were clear predictors.

Barsky, Wool, Barnett, and Cleary (1994) screened patients attending a general medical clinic and identified 60 patients with hypochondriasis and 60 without. Those with hypochondriasis were more often females and had lower socio-economic status, and reported more adverse experiences before age 17: major upheaval between parents (28.6% vs. 9.1%), traumatic sexual experience (28.6% vs. 7.3%), and being a victim of violence (32.1% vs. 7.3%). The group with hypochondriasis also reported

a higher frequency of often being sick during childhood (33.3% vs. 8.3%) and missing school because of health problems (53.3% vs. 16.7%). The groups with and without hypochondriasis did not differ in the severity of current health problems.

The National Survey of Health and Development in Great Britain provides longitudinal data on a cohort born in 1946 and permits evaluation of childhood risk factors for medically unexplained symptoms in adulthood (Hotopf, 2002; Hotopf, Mayou, Wadsworth, & Wessely, 1999). At age 36, participants with abridged somatization ($n = 191$) were compared to the remainder of the sample ($n = 3107$). Abridged somatization was associated with lower education, the presence of psychiatric disorder, and being widowed, divorced or separated. The longitudinal data showed a strong association between abridged somatization and ratings of the mother's and father's health when the respondent was aged 15 and persistent abdominal pain during childhood, but not serious physical disease during childhood. Watt and Stewart (2000) investigated the relationship between childhood learning experiences and elevated hypochondriacal concerns among college students. The Learning History Questionnaire, Revised (Watt, Stewart, & Cox, 1998) gathered data on childhood sick-role experiences/somatic symptoms and observation of parental sick-role/somatic symptoms. Respondents with higher levels of hypochondriacal concerns reported increased experiences in both these areas.

The results of these studies suggest relationships between childhood experiences, particularly adverse events, and health anxiety and somatization during adult years. There are some differences in findings among the studies that may relate to differences in samples and dependent measures. The evidence for poor subjective health of parents and poor subjective health during childhood as risk factors for adult somatoform disorders seems quite convincing. Lack of parental care (possibly due to parental illness or life stress) was found to be a strong factor in one study. The research on particular parenting styles and health anxiety and somatization is limited at this point (Craig, Bialas, Hodson, & Cox, 2004).

STRESSFUL LIFE EVENTS

The South London Somatization Study described above considered the impact of stressful life events as an adult and the issue of secondary gain (Craig, Drake, Mills, & Boardman, 1994). The study used the Life Events and Difficulties Schedule (Brown & Harris, 1978), to evaluate the qualitative aspects of stressful experiences in the context of an individual's life

situation. In the 38 weeks before the interview, severe life events were more common in the Somatizer (59%) and Psychologizer (64%) groups, than in the Physical (18%) or Healthy Control (16%) groups. A similar pattern was seen for major life difficulties. Many of these events and difficulties were judged to have secondary gain potential. Those in the Somatizer group were less likely to use active problem-solving efforts to deal with stressful events and major difficulties than non-somatizers (those in the Psychologizer or Physical groups). The authors noted that these findings were similar to their previous findings concerning the association between stressful life events, anxiety, and major depression.

In a study in a Veterans Affairs primary care clinic, Stein et al. (2004) considered the relationship of sexual assault history to somatic symptoms and health anxiety in women. They found that a history of sexual assault was related to higher levels of somatic symptoms, health anxiety, sick days, and health care utilization. McNutt, Carlson, Persaud, and Postmus (2002) studied the relationship between childhood physical and sexual abuse, past physical and sexual intimate partner violence, and recent emotional, physical, and sexual intimate partner violence. Multiple non-specific somatic symptoms were reported much more frequently by those with abuse experiences.

Hotopf, Mayou, Wadsworth, and Wessely (1998) report a longitudinal study of participants in the National Survey of Health and Development. Six physical symptoms were considered: arthritis and rheumatism, backache, chest pain, dizziness, headache, and abdominal pain. Mental health problems at age 36 were strong predictors of the emergence of each of the new symptoms at age 43, except for arthritis and rheumatism. Back pain, abdominal pain, and chest pain at age 36 were all associated with an increased likelihood of new-onset psychiatric symptoms at age 43. Higher levels of symptoms at age 36 indicated a higher risk of new symptoms or mental health problems at age 43.

Research is consistent in showing higher levels of health anxiety and somatic symptoms among those with higher levels of stressful life events. This finding is similar to the extensive body of research on the etiology of anxiety and depression (Dohrenwend, 1998; Mazure, 1995).

SOCIO-CULTURAL ASPECTS OF SOMATIZATION AND HEALTH ANXIETY

Parents and other specialists in child development have often noted that somatic symptoms are a common way in which children experience and express problems. Children typically report stomachaches, headaches,

and other symptoms when they are confronted with difficult situations. Avoidance is a natural way to attempt to cope with challenging circumstances. The development of the concept of the sick role in sociology (Segall, 1997) has helped to broaden our understanding of common expectations concerning health and illness. Parsons (1951) had a strong impact on the sociological understanding of illness behavior through his description of the sick role. He described the rights and duties conferred on individuals in the sick role and the impact on their functioning in society. In Parson's view, the sick role was conferred on the individual by a medical practitioner. Segall described later criticisms of Parson's concept of the sick role as being overly medicalized and argued for a broader view of health behavior. A great deal of the assessment and management of sickness takes place outside the formal health care system and, in fact, the most common forms of health care are self-care and care by members of the individual's support system. Segall suggests that:

A sick role concept would consist of the following rights: the right to make decisions about health-related behavior (Right 1), the right to be exempt from performing usual well roles (Right 2), and the right to become dependent on lay others for care and social support (Right 3) . . . [The] sick role concept would also consist of the following duties: the duty to maintain health and overcome illness (Duty 1), the duty to engage in routine self-health management (Duty 2), and the duty to make use of a range of health care resources (Duty 3). (p. 297)

These expectations vary depending on the nature and severity of the illness (exemption from some versus all responsibilities) and its duration (temporary vs. permanent). Some individuals rely heavily on the health care system in negotiating these rights and duties, while others rely on their own resources and those of their social system. Given that so much happens outside the formal health care system, it is very important to understand the beliefs (and theories) about the health conditions that guide decision-making and health (or illness) behavior. While most people will move into the sick role when dealing with episodic bouts of illness (a severe cold or back pain, for example), for some individuals the sick role becomes central for extended periods of time. Patients' beliefs about their role in coping with their health problems will be influenced by their experience with, and understanding of, the sick role. For some individuals, the sick role may be a way of escaping from stressful situations or from difficult life problems. Others have ways of managing symptoms that minimize the impact on their everyday life.

Our society looks to medical practitioners to provide information and advice concerning the sick person's rights and responsibilities. A physician's

recommendation is frequently sought concerning an appropriate course of assessment and treatment. The physician is often required to provide information concerning an individual's request to be excused from work responsibilities. Many sources of assistance for those who are ill (unemployment or disability income, home care) require the recommendation of a physician. Finally, input from the physician is frequently requested concerning whether the patient is caring for the health problem so as to return to a state of good health.

INDIVIDUAL BELIEFS CONCERNING ILLNESS AND HEALTH CARE

Typical medical assessments emphasize the evaluation of signs and symptoms related to the problem and how they have evolved over time. Little time may be spent on the person's thoughts and beliefs about the problem. Behavioral scientists who have studied health and illness behavior argue that the patient's understanding is crucial in determining their reaction and later their response to treatment (Leventhal, Meyer, & Nerenz, 1980). For example, Howard Leventhal's *common sense model of health and illness behavior* "places the process of symptom perception in the context of self-regulatory behavior. Symptoms often elicit fear and anxiety, leading the sufferer to engage in ameliorative behaviors. Simultaneously, the layperson evaluates the set of symptoms and develops a naïve theory (or common-sense model) of what the symptoms mean and how best to respond" (Martin, Lemos, & Leventhal, 2001, p. 27). Often the patient's understanding of the problem is different from the physician's, which may result in coping behavior that conflicts with medical recommendations. Evaluating the patient's beliefs about the problem and what best to do about it will help the clinician to develop appropriate interventions (Salmon, Woloshynowych, & Valori, 1996).

Woloshynowych, Valori, and Salmon (1998) carried out a qualitative and quantitative study of patients' expectations when attending primary care clinics in England. Interviews before the physician visit indicated that patients had a wide range of beliefs about the etiology of their symptoms, with many patients seeing stress and lifestyle as major factors. When patients were asked what responses from the physician would be helpful, the most frequently identified areas of help were: having the physician explain what is wrong (73%), talking about the symptoms (55%), medication (51%), changing diet or lifestyle (32%), seeing a specialist (30%), having tests (28%), and an operation (8%). The response expected most frequently is that of

obtaining an explanation of the symptoms (and possibly reassurance about their management).

Peters, Stanley, Rose, and Salmon (1998) studied the beliefs of patients with medically unexplained symptoms concerning their problem and the appropriate medical response. Respondents had physical symptoms that persisted for at least one year and remained unexplained, despite specialist referral and investigation. Symptoms were mainly pain (localized or extensive) and fatigue, but also included bowel problems, respiratory problems, dizziness, sweating, and nausea. This was a group with severe difficulty (due to the duration of the problem) and a high level of health care utilization. The interviews with 68 patients used open-ended questions and explored current symptoms; history of illness, medical investigation, and treatment; explanations of symptoms; and perception of the doctor's role. Few patients received explanations of symptoms that satisfied them and, consequently, their understanding was fluid. Medical terms and ideas did not dominate among the patients' explanations and four non-medical themes were reported most frequently: (a) a malicious, autonomous disease entity which could come and go, causing increases and decreases in symptoms; (b) social influences, such as the stress of a job, a relationship, or a family problem; (c) internal imbalance, such as excessive or inadequate strength in any of a variety of bodily systems (e.g., a chemical imbalance, making too much adrenaline, immune system problems, doing too much thereby causing an imbalance); and (d) nervous and psychological mechanisms emphasizing internal factors (nerves, thinking too much) rather than external factors (such as stress). Respondents generally felt that only they could understand their symptoms because only they could feel the symptoms. In contrast, doctors were portrayed as relying on what they could see and demonstrate with imperfect techniques. Negative investigations were interpreted as a failure to reveal the problem. Patients gathered information about their symptoms from a variety of sources and compared different providers in terms of their management. They frequently criticized the competence of doctors in applying their limited knowledge, and often saw doctors as denying the reality or the importance of the symptom, and this produced a negative reaction. Patients were also quite prepared to reject a doctor's advice if it did not fit with their understanding of the problem and what was needed to treat it.

The analysis summarized what the patients wanted from their doctors. First, patients wanted to have a name for the problem and reassurance that it was not life-threatening. Unknown and unnamed problems contributed to anxiety. Second, some patients wanted a

simple explanation of the problem. Finally, some patients appreciated seeing the doctor's engagement in the problem, even if there was not a solution.

This team then examined patients' perceptions of the medical explanations they received (Salmon, Peters, & Stanley, 1999). Three patterns of medical explanation were identified. The first one was described as *rejection*. Most commonly this occurred when the patient's perception was that negative test results were taken by the physician to indicate that nothing was wrong. A diagnosis of anxiety or depression was often assumed to mean that the symptoms were unjustified or imaginary. The second pattern was described as *collusion*, where the doctor was seen as agreeing to an explanation offered by the patient. In some of these cases, the patient questioned the doctor's competence. The third pattern was described as *empowerment*. The physician was seen as providing a tangible explanation that removed any sense of blame and provided the patient with opportunities for self-management. The authors suggested that this empowering approach fit well with the reattribution approaches used in some models of medical consultation and cognitive behavior therapy.

Another study by this group considered whether patients pressure primary care providers to pursue somatic treatment. The study analyzed audiotaped interactions between 36 patients and their physicians concerning unexplained medical symptoms (Ring, Dowrick, Humphris, & Salmon, 2004). Ten patients made a specific request of the physician (one for physiotherapy, four repeat prescriptions, six new prescriptions, and five sick notes). While none of the patients asked for investigation or medical referral, all but one presented their problem in ways that could put pressure on the physician to take additional action. Twenty-four reported how their symptoms impaired normal activities or social behavior and 22 used very emotive language to describe the difficulty caused by their symptoms. Nineteen suggested physical explanations for their symptoms of a general nature (e.g., gas) or a more specific nature that would require some response from the physician (e.g., ulcer, pleurisy, arthritis), but these were presented as proposals for discussion rather than firm beliefs. Sixteen patients cited other people, usually family members, as authority for the reality and severity of the symptoms and the need for medical attention. No patient explicitly contradicted the doctor, but 17 negated in indirect ways the physician's attempts to explain or manage the symptoms and, in particular, to exclude disease. Some offered alternative diagnoses or emphasized the ineffectiveness of previous treatments. Another factor that was challenging for the physician was the number of different symptoms presented (21 patients presented at least 3) and the complex temporal patterning of the symptoms. In spite of the low level of requests

for somatic interventions, 27 patients received these, including further investigation (12), specialist referrals (4), sick notes (5), psychotropic drugs (5), and physiotherapy (1). The authors suggested that many of these interventions were not likely to be helpful and that primary care providers could use assistance in developing alternative responses to the problems presented by patients with medically unexplained symptoms. Further analysis of patient–physician interactions in this sample indicated that the majority of patients presented information that could have led to a discussion of the link between the symptoms and life stress or anxiety/depression (Salmon, Dowrick, Ring, & Humphris, 2004).

CROSS CULTURAL FACTORS

Escobar and his colleagues studied somatization in Los Angeles and Puerto Rico (Escobar et al., 1989). The prevalence of abridged somatization was more than four times higher in Puerto Rico (20% in females and 18% in males) than in Los Angeles (4.4%). On most measures, the Mexican-American participants in Los Angeles fell midway in their responses between the Puerto Rican respondents and non-Hispanic individuals in Los Angeles.

Cultural differences were the focus in *The World Health Organization Collaborative Study on Psychological Problems in General Health Care* (described in Chapter 1). This study included urban, primary care clinics in 15 cities: Ankara, Turkey; Athens, Greece; Bangalore, India; Berlin, Germany; Gronigen, Netherlands; Ibadan, Nigeria; Mainz, Germany; Manchester, U.K.; Nagasaki, Japan; Paris, France; Rio de Janeiro, Brazil; Santiago, Chile; Seattle, U.S.A.; Shanghai, China; and Verona, Italy. The authors found that:

Self-reported current somatic symptoms were strongly and consistently related to current psychological distress. No somatic symptom or pattern of symptoms was specifically associated with symptoms of anxiety or depression. Individual sites had generally similar patterns of association between psychological distress and individual somatic symptoms, although a few symptoms showed considerable variation across study sites. . . . Contrary to expectation, somatic symptoms showed a generally similar pattern of association with psychological distress among North American and Western European patients as among patients in non-Western and developing countries (Simon, Gater, Kisely, & Piccinelli, 1996, p. 487).

This finding was consistent whether they considered all somatic symptoms or only medically unexplained symptoms. In examining reports of specific symptoms, they found that shaking spells were minimally

associated with psychological distress at most sites but were among the most strongly associated in Ankara and Athens. Diarrhea and excessive gas were moderately associated with distress at a number of European sites, but were weakly or even negatively associated in Rio and Santiago. The authors concluded that the findings are consistent with a model of *somatosensory amplification* or heightened symptom sensitivity associated with psychological distress. They also noted that just as distress may cause an increase in somatic symptoms, symptoms may cause an increase in psychological distress. The study did not consider the meaning of symptoms or the anxiety associated with them, factors that may differ across cultures.

This study considered individual symptoms and the association between symptoms and psychological distress. A study from the same group (Gureje, Simon, Ustun, & Goldberg, 1997) considered the rates of somatization disorder and abridged somatization disorder across these settings. ICD-10 somatization disorder was found in a modest number of patients (2.8% across all the centers). Abridged somatization, which has been found to be associated with similar levels of disability compared to the full disorder, was found in 19.8% of patients. Rates of abridged somatization varied widely across the cities, ranging from highs of 45.7% in Santiago and 35.6% in Rio to lows of 7.7% in Athens, 9.7% in Verona, and 10% in Seattle. Most of the remaining cities reported proportions in the range from 15% to 25%. Presence of abridged somatization was associated with lower levels of education and more frequent presence of chronic physical disease. Abridged somatization was associated with a higher number of disability days in the previous month and a higher level of occupational disability, even when controlling for physical health status. About 40% of respondents with this disorder also met criteria for either generalized anxiety disorder or major depression.

Gureje et al. (1997) studied hypochondriacal concerns in the same sample and found somewhat different patterns across the cities involved. The proportion of patients reporting persistent belief in the presence of a serious physical disease or a persistent preoccupation with a presumed deformity, associated with distress or interference with functioning, was much higher in Santiago (12.6%), Berlin (6.9%), and Mainz (5.7%), and much lower in Bangalore (0.2%), Ankara, Manchester, and Shanghai (all 0.8–0.9%), compared to the other cities. As was the case with abridged somatization, hypochondriacal concerns were associated with generalized anxiety disorder and major depression, more impairment in social roles, and higher levels of health service utilization.

Clearly there are large cultural differences in the presentation of somatization and health anxiety, although the strong association with

psychological distress appears to hold across cultures. It is important for clinicians to have a high degree of cultural awareness in dealing with these conditions.

CONCLUSION

Our understanding of etiological factors in health anxiety and somatization is clearly expanding. There is solid evidence for the role of genetic factors, childhood adversity, exposure to family members with illness, experience of somatization during childhood, and stressful life events in the development of these problems. There is fascinating evidence concerning parental management of childhood symptoms and illness but this area has been less extensively studied. Studies that consider several etiological factors at once and the longitudinal course of somatization and health anxiety are particularly informative.

As a better understanding of multiple etiological factors develops, it will be important to mount studies of the chain of events by which these etiological factors have their influence on health beliefs and behavior. This will assist in developing appropriate strategies for timely and cost-effective intervention. Preventive approaches during childhood and adolescence are likely to be particularly important.

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