

Medically unexplained physical symptoms

by Jungwee Park and Sarah Knudson

Keywords: chronic fatigue syndrome, fibromyalgia, multiple chemical sensitivity

A substantial number of Canadians report symptoms of conditions that cannot be definitively identified through physical examination or medical testing.¹ Known as “medically unexplained physical symptoms,” or “MUPS,” they characterize conditions such as chronic fatigue syndrome, fibromyalgia and multiple chemical sensitivity.²⁻⁵ The lack of consistent explanations from physical and laboratory assessments has caused confusion and controversy about these conditions. Many people, including some health care professionals, do not believe that these conditions exist, attributing the symptoms to a variety of other causes. However, for the people who are affected, the symptoms are real and frequently debilitating.

Based on information from the 2002 and 2003 Canadian Community Health Survey (CCHS), this article describes the prevalence of MUPS and the characteristics of Canadians who report having these conditions. It also examines co-morbidity with psychiatric disorders, and associations with dependency, self-perceived mental health, and the use of health care services.

Symptoms overlap

Chronic fatigue syndrome (CFS), fibromyalgia (FM) and multiple chemical sensitivity (MCS) are characterized by clusters of symptoms originating from several different organ systems, which remain medically unexplained.⁶ These conditions share key symptoms,¹⁻⁴ and individuals often meet the criteria for more than one of them.

Extreme tiredness is the most salient symptom of *chronic fatigue syndrome*. Also known as myalgic encephalomyelitis, CFS is mostly determined by negative diagnosis; that is, a patient is said to have

the syndrome only when other medical conditions with similar symptoms have been ruled out.^{5,7}

The diagnostic criterion for *fibromyalgia* is pain lasting three months or more in at least 11 of 18 specified areas.⁵ The pain is often, but not necessarily, accompanied by symptoms that are common to CFS, such as cognitive impairment, headache, sore throat, weakness, fatigue, depression and digestive problems.^{5,7}

Those who suffer from *multiple chemical sensitivity* develop a variety of symptoms when they are exposed to synthetic chemicals in doses that usually have no noticeable effect. Among the symptoms triggered by chemical exposure are changes in heart rate, difficulty breathing, rashes, nausea, headache, and confusion.⁸ The duration, severity and nature of these reactions vary greatly, and symptoms may last for days.

More than one million

According to the 2003 Canadian Community Health Survey, 5% of Canadians aged 12 or older, an estimated 1.2 million people, reported having been diagnosed with at least one of three MUPS conditions: 1.3% reported CFS; 1.5%, FM; and 2.4%, MCS (Table 1). Among individuals with MUPS, about 14% had at least two of the three conditions (data not shown).

For each of the three conditions, prevalence rates for women were more than twice those for men (Table 1). As well, the overall prevalence of MUPS rose with age from 1.6% at ages 12 to 24 to 6.9% at ages 45 to 64. This pattern was similar for each of the three conditions. Even when variables such as household income, education and marital status were taken into account, the age-sex differences remained significant (data not shown).

The likelihood of reporting MUPS was associated with socio-economic status. The overall

Table 1**Prevalence of medically unexplained physical symptoms (MUPS), household population aged 12 or older, Canada, 2003**

	Total MUPS		Chronic fatigue syndrome		Fibromyalgia		Multiple chemical sensitivity	
	'000	%	'000	%	'000	%	'000	%
Total	1,185	4.5	341	1.3	393	1.5	643	2.4
Sex								
Male ¹	325	2.5	106	0.8	77	0.6	180	1.4
Female	860	6.4*	235	1.7*	316	2.4*	463	3.4*
Age								
12 to 24	89	1.6*	22	0.4*	15	0.3 ^{E*}	58	1.1*
25 to 44	329	3.5*	91	1.0*	97	1.0*	186	2.0*
45 to 64	543	6.9*	159	2.0*	208	2.7*	289	3.7*
65 or older	224	6.0*	70	1.9*	73	1.9*	110	2.9*
Household income								
Lowest	142	7.0*	57	2.8*	45	2.2*	69	3.4*
Lower-middle	255	5.8*	88	2.0*	85	2.0*	136	3.1*
Upper-middle	339	4.5	89	1.2	110	1.5	183	2.4
Highest	253	3.1*	53	0.7*	91	1.1*	145	1.8*
Education (age 25 to 64)								
Less than secondary graduation	164	6.8*	53	2.2*	59	2.4*	76	3.1
Secondary graduation	157	4.9	42	1.3	58	1.8	83	2.6
Some postsecondary	55	5.1	13	1.2	19	1.8	33	3.1
Postsecondary graduation	474	4.7*	136	1.3	163	1.6*	269	2.7
Marital status (age 25 or older)								
Married ¹	602	4.7	165	1.3	216	1.7	321	2.5
Divorced/Separated/Widowed	153	8.6*	48	2.7*	57	3.2*	84	4.7*
Never married	118	4.3	36	1.3	32	1.2*	70	2.6

* Significantly different from estimate for reference category ($p < 0.05$)¹ Reference category; if no category is indicated, reference is total.^E Coefficient of variation 16.6% to 33.3% (interpret with caution)

Note: Because some respondents have more than one condition, detail adds to more than total MUPS.

Source: 2003 Canadian Community Health Survey, cycle 2.1

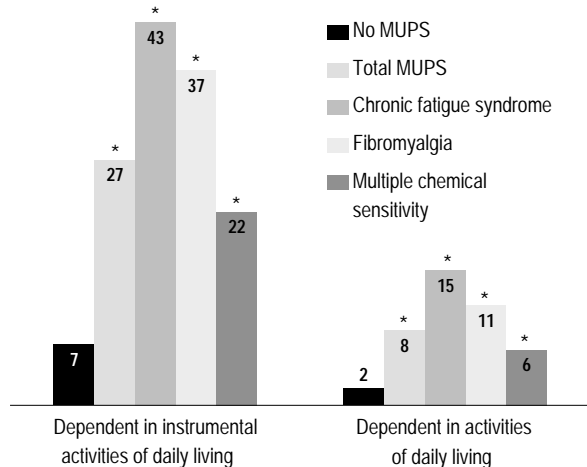
prevalence rate and the rate for each of the three conditions were significantly above the national figures among residents of the lowest income households, and significantly below the national level among people in the highest income households. Similarly, a relatively high proportion of people with less than secondary graduation reported MUPS, while the proportion was lower among postsecondary graduates. However, the relationship between educational attainment and the three individual conditions was less straightforward.

Compared with married people, those who were no longer married were almost twice as likely to report each of the three conditions. This association with marital status remained significant when the effects of the other socio-demographic variables were accounted for.

Dependency

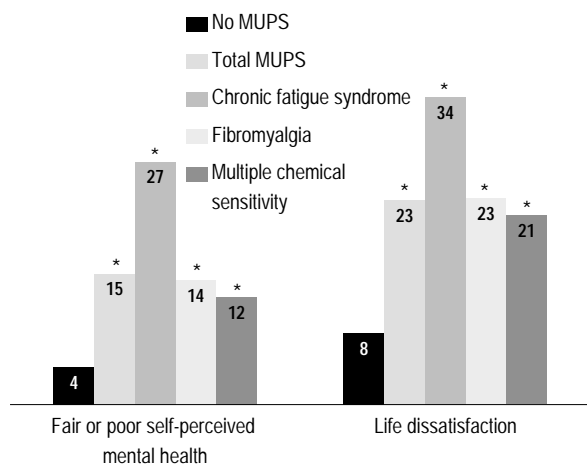
Significantly high percentages of people with MUPS reported some degree of dependency (Chart 1). More than a quarter (27%) of them needed help with instrumental activities of daily living such as preparing meals, doing everyday housework, getting to appointments and running errands; this compared with 7% of people without MUPS. As well, 8% of individuals with MUPS reported that they needed assistance with personal activities of daily living such as bathing, dressing, eating, taking medication, and moving about inside the house; the figure was 2% among people who did not report MUPS. Even when socio-demographic factors were taken into account, the association between MUPS and dependency remained significant (data not shown)

Chart 1
Percentage dependent, by presence of medically unexplained physical symptoms (MUPS), household population aged 12 or older, Canada, 2003



* Significantly different from estimate for no MUPS ($p < 0.05$)
Source: 2003 Canadian Community Health Survey, cycle 2.1

Chart 2
Percentage with fair or poor self-perceived mental health and life dissatisfaction, by presence of medically unexplained physical symptoms (MUPS), household population aged 12 or older, Canada, 2003



* Significantly different from estimate for no MUPS ($p < 0.05$)
Source: 2003 Canadian Community Health Survey, cycle 2.1

Mental health and well-being

Not surprisingly, substantial proportions of people with MUPS had a negative perception of their physical health (data not shown). They were also more likely than people who did not have MUPS to view their mental health as fair or poor: 15% versus 4%. As well, close to one-quarter (23%) of people with MUPS were dissatisfied with their lives, compared with 8% of those who were not afflicted (Chart 2).

Mental disorders

An extensive literature has shown MUPS to be strongly and consistently associated with psychosocial distress and psychiatric disorders.^{6,9} According to the 2002 CCHS, individuals with MUPS were more likely than people without MUPS to have psychiatric disorders. The analysis in this article focuses on the past 12-month prevalence of major depressive disorder, bipolar I disorder, panic disorder, social anxiety disorder, and agoraphobia. Respondents who met the criteria for at least one of these five conditions were considered to have a mental disorder.

Table 2
Prevalence of at least one mental disorder† in past 12 months, by presence of medically unexplained physical symptoms (MUPS), household population aged 15 or older, Canada excluding territories, 2002

	Prevalence of mental disorder
	%
No MUPS	8.1
No MUPS but other chronic condition(s) [‡]	9.9 [§]
Total MUPS	21.3*
Chronic fatigue syndrome	36.4*
Fibromyalgia	25.1*
Multiple chemical sensitivity	13.9*

* Significantly different from estimate for no MUPS ($p < 0.05$)
[†] Major depressive disorder, bipolar I disorder, panic disorder, social anxiety disorder, or agoraphobia
[‡] Asthma, arthritis or rheumatism, back problems, high blood pressure, migraine, chronic bronchitis, emphysema, diabetes, epilepsy, heart disease, cancer, ulcers, effects of stroke, bowel disorder, or thyroid disorder
[§] Significantly different from estimate for total MUPS ($p < 0.05$)
 Source: 2002 Canadian Community Health Survey: Mental Health and Well-being, cycle 1.2

The questions

The prevalence of *medically unexplained physical symptoms (MUPS)* was based on self-reports of diagnosed illness. Cycles 1.2 and 2.1 of the Canadian Community Health Survey (CCHS) used a checklist of conditions. Respondents were asked about “long-term health conditions that have lasted or are expected to last six months or more and that have been diagnosed by a health professional.” Interviewers read a list of conditions including chronic fatigue syndrome, fibromyalgia, and chemical sensitivities. Respondents who answered positively to at least one of these three conditions were classified as suffering from MUPS.

The prevalence of *other chronic conditions* was determined in the same way. Asthma, arthritis or rheumatism, back problems, high blood pressure, migraine, chronic bronchitis, emphysema, diabetes, epilepsy, heart disease, cancer, ulcers, the effects of stroke, bowel disorder, and thyroid disorder were considered in this analysis.

To assess *dependency*, respondents were asked, “Because of any physical condition or mental condition or health problem, do you need the help of another person . . .” and they were read a list of activities. Dependency in instrumental activities of daily living was considered to be present if respondents reported needing help with at least one of the following:

- preparing meals
- getting to appointments and running errands such as shopping for groceries
- doing everyday housework
- looking after personal finances such as making bank transactions or paying bills

Dependency in activities of daily living was considered to be present if respondents reported needing help with either of the following:

- personal care such as washing, dressing, eating or taking medication
- moving about inside the house

In accordance with the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI) protocol, cycle 1.2 of the CCHS assessed mental disorders using the definitions and criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*.¹⁰ The analysis in this article focuses on the past 12-month prevalence of five mental disorders: major depressive disorder, bipolar I disorder, panic disorder, social anxiety disorder, and agoraphobia.¹¹ Respondents who met the criteria for at least one of these conditions were considered to have a mental disorder.

Consultations with family doctor/general practitioner was based on the question: “In the past 12 months, how many times have you seen or talked on the telephone about your physical, emotional or mental health with a family doctor or general practitioner?”

Consultations with specialists was based on the question: “In the past 12 months, how many times have you seen, or talked on the telephone about your physical, emotional or mental health with any other medical doctor (such as surgeon, allergist, orthopedist, gynaecologist, or psychiatrist)?”

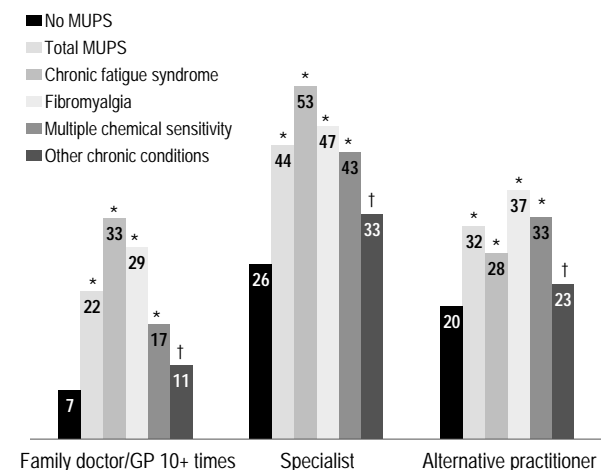
Consultations with alternative practitioners was based on two questions: “In the past 12 months, have you seen or talked to an alternative health care provider such as an acupuncturist, homeopath or massage therapist about your physical, emotional or mental health?” and “In the past 12 months, how many times have you seen or talked on the telephone about your physical, emotional or mental health with a chiropractor?” Respondents who replied affirmatively to the first question or answered “at least one time” to the second were considered to have consulted an alternative practitioner.

More than one-fifth (21%) of people with MUPS had at least one of these disorders, compared with 8% of those who did not have MUPS and 10% of people with other chronic physical conditions such as asthma, diabetes, migraine, cancer and heart disease (Table 2). The prevalence of psychiatric disorders was particularly common among people with CFS: 36%. But although the prevalence of mental disorders was high among people with MUPS, some research suggests that the stress of having unexplained symptoms may lead to mental health problems—in many cases, MUPS precedes psychiatric symptoms.¹²

Consultations with health care providers

Patients with MUPS tend to report a relatively large number of medical consultations. Compared with people without MUPS, and even with those who had other chronic conditions, individuals with MUPS were more likely to seek assistance from both conventional and alternative health care providers (Chart 3). In 2003, 22% of MUPS

Chart 3
Percentage who consulted health care providers in past year, by presence of medically unexplained physical symptoms (MUPS), household population aged 12 or older, Canada, 2003



* Significantly different from estimate for no MUPS ($p < 0.05$)

† Significantly different from estimate for total MUPS ($p < 0.05$)

Source: 2003 Canadian Community Health Survey, cycle 2.1

The data

The estimated prevalence of chronic fatigue syndrome, fibromyalgia and multiple chemical sensitivity, as well as "total MUPS" (medically unexplained physical symptoms), is based on data from cycle 2.1 of the Canadian Community Health Survey (CCHS), conducted from January through December 2003. The CCHS 2.1 covered the household population aged 12 or older. It excluded members of the regular Armed Forces and residents of Indian reserves, military bases, health care institutions and some remote areas. The sample consisted of 135,573 respondents aged 12 or older; the overall response rate was 80.6%.

The estimated prevalence of mental disorders is based on data from cycle 1.2 of the CCHS, which began in May 2002 and was conducted over eight months. The CCHS 1.2 covered people aged 15 or older living in private households in the 10 provinces. It excluded members of the regular Armed Forces and residents of the three territories, Indian reserves, military bases, health care institutions and some remote areas. The sample consisted of 36,984 respondents aged 15 or older; the overall response rate was 77%.

All differences were tested to ensure statistical significance; that is, that they did not occur simply by chance. To account for survey design effects, standard errors and coefficients of variation were estimated using the bootstrap technique.^{13,14} A significance level of $p < 0.05$ was applied in all cases.

patients reported having consulted their family doctor or general practitioner more than 10 times in the past year; 7% of people without MUPS had done so. Over 40% of people with MUPS had consulted specialists versus 26% of those without MUPS. And 32% of all MUPS patients sought help from alternative practitioners, compared with 20% of people without MUPS. These high consultation rates, however, may reflect multiple referrals.

Jungwee Park (613-951-4598; Jungwee.Park@statcan.ca) is with the Health Statistics Division at Statistics Canada in Ottawa, Ontario, K1A 0T6, and Sarah Knudson is with the University of Toronto in Toronto, Ontario.

References

- Richardson RD, Engel CC. Evaluation and management of medically unexplained physical symptoms. *The Neurologist* 2004; 10(1): 18-30.
- Aaron LA, Buchwald D. A review of the evidence for overlap among unexplained clinical conditions. *Annals of Internal Medicine* 2001; 134(Pt 2): 868-81.
- Buchwald D, Garrity D. Comparison of patients with chronic fatigue syndrome, fibromyalgia, and multiple chemical sensitivities. *Archives of Internal Medicine* 1994; 154(18): 2049-53.
- Jason LA, Taylor RR, Kennedy CL. Chronic fatigue syndrome, fibromyalgia, and multiple chemical sensitivities in a community-based sample of persons with chronic fatigue syndrome-like symptoms. *Psychosomatic Medicine* 2000; 62: 655-63.
- Zavestoski S, Brown P, McCormick S, et al. Patient activism and the struggle for diagnosis: Gulf War illnesses and other medically unexplained physical symptoms in the US. *Social Science & Medicine* 2004; 58(1): 161-75.
- Escobar JI, Hoyos-Nervi C, Gara M. Medically unexplained physical symptoms in medical practice: A psychiatric perspective. *Environmental Health Perspectives* 2002; 110(Suppl. 4): 631-6.
- Hydén L-C, Sachs L. Suffering, hope and diagnosis: on the negotiation of chronic fatigue syndrome. *Health* 1988; 2(2): 175-93.
- Lamielle M. *Multiple Chemical Sensitivity and the Workplace*. Voorhees, New Jersey: National Center for Environmental Health Strategies, Inc., 2002.
- Richardson, RD Engel CC. Evaluation and management of medically unexplained physical symptoms. *The Neurologist* 2004; 10(1): 18-30.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*. Washington, DC: American Psychiatric Association, 2000.
- Statistics Canada. Definitions of mental disorders in the Canadian Community Health Survey: Mental Health and Well-being. *Health Reports* (Statistics Canada, Catalogue 82-003) 2004; 15(Suppl.): 49-63.
- Richman JA, Jason LA. Gender biases underlying the social construction of illness states: the case of chronic fatigue syndrome. *Current Sociology* 2001; 49(3): 15-29.
- Rao JNK, Wu CFJ, Yue K. Some recent work on resampling methods for complex surveys. *Survey Methodology* (Statistics Canada, Catalogue 12-001) 1992; 18(2): 209-217.
- Rust KF, Rao JNK. Variance estimation for complex surveys using replication techniques. *Statistical Methods in Medical Research* 1996; 5: 281-310.