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Symptom clusters at midlife: A four-country comparison of checklist and qualitative responses

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Abstract

Objectives—The purpose of this study was to examine the frequency and clustering of somatic symptoms as reported by women aged 45-55 years in four countries, to compare women's responses to open-ended questions with those derived from structured checklists, and to assess the extent to which bodily symptoms grouped with emotional complaints.

Methods—The Decisions at Menopause Study (DAMES) recruited 1,193 women from the general population in Beirut, Lebanon; Rabat, Morocco; Madrid, Spain; and central Massachusetts. Women participated in semi-structured interviews about health, menopause, and bodily changes at midlife. Women's responses to symptom checklists and their statements in response to open-ended questions were analyzed through factor analysis and textual analysis.

Results—There was considerable consistency between the frequencies of quantitative and qualitative responses, and the analyses of qualitative data illustrate the extent to which women associate somatic and emotional complaints. In open-ended responses, women in Massachusetts and Spain did not often cluster somatic symptoms together with emotional symptoms. In Morocco, dizziness, fatigue, and headaches were clustered with emotional symptoms. Women in Lebanon explicitly associated shortness of breath, chest pain, palpitations, dizziness, fatigue, gastrointestinal complaints, headaches, and, to a lesser extent, joint pain and numbness with emotional symptoms.

Conclusions—The number of volunteered symptom responses was small because respondents were relatively healthy; however, the extent and pattern of association between somatic and emotional symptoms varied across sites. Certain somatic symptoms may be more likely to communicate psychosocial distress in particular cultures. These results have implications for patterns of health care utilization.

Keywords

cross-cultural comparison; menopause; somatic symptoms; emotional symptoms; women's health; midlife

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Introduction

Women at midlife experience symptoms associated with both menopause and aging.^{1,2} While the focus of research at midlife is often on vasomotor symptoms (hot flashes and night sweats), the frequency of somatic complaints exceeds the frequency of vasomotor complaints in many, if not most, studies.³⁻⁵ Somatic symptoms include pain and non-pain complaints such as shortness of breath, headaches, fatigue, palpitations, dizziness, musculoskeletal aches, and joint stiffness.

The causes of somatic symptoms are multifactorial and include psychosocial and emotional, along with physiological factors. For example, increasing body mass index (BMI) is associated with the likelihood of shortness of breath and musculoskeletal aches.^{6,7} Increasing blood loss with peri-menopausal menstruation may be associated with anemia experienced as fatigue.^{8,9} Prevalence of headaches may decrease in association with the hormonal changes of menopause,¹⁰ but tension headaches may increase in association with the stress of aging parents and/or adolescent children. Relatedly, many pain and non-pain somatic symptoms are associated with depressed mood or anxiety.^{7,11-13}

“Somatization” can be variously defined as the expression of physical symptoms in the absence of medically confirmed pathology,^{12,14} as the experience of psycho-social problems in physiological terms,¹⁵ or as bodily symptoms attributed to negative emotions that are culturally inappropriate or too terrible to express and, therefore, communicated through the body.¹⁶⁻¹⁹ Similarly, “cultural idioms of distress” or “somatic idioms” offer a means to express psychosocial suffering through visceral responses when other means of expression do not adequately communicate an individual's experience.^{12,20-22}

Persistent somatic symptoms, such as headaches, fatigue, palpitations, dizziness, musculoskeletal aches, joint stiffness, and chest pain, highlight classificatory ambivalence about the mind/body divide,¹¹ and prompt debate about terminology, etiology and treatment.²³⁻²⁸ At the core of these debates is the association between somatic symptoms and depression or anxiety.^{11-13,16} Somatization tends to be comorbid with depression, particularly in cultures that accept some somatic symptoms as having psychosocial causes. In countries that value direct expression, positive correlations have been found between the number of somatic and depressive symptoms.¹² In addition, psychological distress may amplify some somatic symptoms, accounting for the association between somatic symptoms and depression or anxiety.¹³

Comparative studies across nations or cultures^{29,30} are an important means to examine variation in the extent to which somatic symptoms express psychosocial distress,^{12,15} how explanations for symptoms differ across populations,³¹ and which somatic symptoms may represent better candidates for communicating depression and anxiety.

Many studies of menopause and midlife have investigated correlations among symptoms using factor analyses in order to construct or evaluate symptom checklists,³²⁻³⁵ or test the validity of preconceived biomedical groupings by clustering symptoms into groups based on statistical relationships.^{5,36} Symptom clusters can be used to suggest underlying determinants or conceptual groups, i.e., what symptoms “naturally” group together.

Table 1 organizes details from eight factorial studies to demonstrate how somatic symptoms cluster with psychological symptoms across study sites. This table does not include vasomotor, urinary, genital, sexual, mental (e.g., memory loss or difficulty concentrating), or sleep-related symptoms because these are not commonly categorized as somatic or psychological disorders. Neither does it include the everyday complaints (e.g., sore throat, or persistent cough) included in some symptom checklists to minimize the impact of

stereotypes about menopause on symptom reporting.^{34,37} The table shows that “palpitations,” “rapid heartbeat,” or “heart pounding” grouped with psychological symptoms in each of the six studies where the symptom was included in the checklist except for Japan. “Tiredness,” “fatigue,” “lack of energy,” “loss of energy,” “fatigue/weak,” or “fatigue weary” clustered with psychological symptoms in three of the six studies where the symptom was queried. In addition to rapid heartbeat and lack of energy, trouble breathing, headaches, stiffness, dizziness, chest pain, gastrointestinal (GI) complaints, and low back pain clustered with psychological symptoms in various studies.

These statistical relationships are based on checklist responses to structured symptom lists. Importantly, these relationships are also based on how many factors the researchers decide to present. Symptoms cluster or separate depending on the number of factors selected. As Ho et al.³⁸ point out, “the decision on the final number of factors ... [is] based on both theoretical grounds and interpretability.” In some cases, “interpretability” may mean concordance with biomedical categories. At times, interpretability is so difficult that researchers abandon the effort.³⁹ Alternatively, reliance on statistical relationships can result in factors that cluster disparate symptoms, for example a general somatic factor composed of eye irritation, headaches, and dry skin.⁴⁰ Would women group symptoms in the same way in response to open-ended questions? Do statistical relationships among checklist symptoms reflect the subjective experience of the midlife transition? How do symptoms relationships change across cultures?

The purpose of this study was to use quantitative and qualitative data from a multi-country study of menopause to measure the frequency of pain- and nonpain-related somatic symptoms, to consider the extent to which women in the different countries group somatic symptoms with emotional and other complaints in open-ended responses, and to examine variations across countries in the particular somatic symptoms that are associated with emotional symptoms, especially nervousness, anxiety, and depression.

Methods

The Decisions At Menopause Study (DAMES) was a multisite study of women aged 45 to 55 drawn from the general population in Beirut, Lebanon; Rabat, Morocco; Madrid, Spain; and central Massachusetts, U.S. The study sought to compare the symptomatology and experience of menopause in 4 sites that differ in socioeconomic indicators, degree of medicalization, the construction of gender, and cultural context. Details on the methodology can be found in previously published articles on each site and in a comparative analysis.⁴¹⁻⁴⁵ Here, we provide main points on data and methods.

In Beirut, a representative sample was drawn from the sampling frame of the Population Laboratory of the American University of Beirut, and 301 women were interviewed. In Rabat, the sampling frame of the national Pan Arab Child Health Survey was used, and strata for the city of Rabat, representing all socioeconomic levels, were obtained. Households were randomly selected until 299 women aged 45 to 55 years were interviewed. In Madrid, the city government provided a random sample of 1500 women drawn from census lists in 20 districts. Letters were sent to women aged 45 to 55 years and 300 interviews were completed. In central Massachusetts, the sample was based on membership records of the Fallon Community Health Plan (FCHP), a mixed-model health maintenance organization, and interviews with 293 women were carried out. The protocol of the study was approved by the Committee on Human Subjects of Harvard University, and in each site the study was approved by the relevant local ethics board.

To foster the comparability of the studies across sites, interviewers were trained to ask the same questions, provide explanations and offer prompts in the same way in each country. They were also instructed to write answers onto the questionnaires, and these were subsequently coded and transcribed.

Face-to-face interviews were conducted using an instrument that was tested and adapted for each site. It included closed-ended questions and checklists to collect demographic data and information about health and reported symptoms, as well as open-ended questions to elicit women's views and experiences regarding their health. In this analysis, we use women's responses to a checklist of 25 cardiovascular, digestive, genito-urinary, mental/emotional, vasomotor and general symptoms. The list was based on validated instruments,^{37,46} and asks women if they experienced symptoms in the previous month. We also analyzed women's responses to open-ended questions about health status, menopausal symptoms, change in health, chronic conditions, bodily changes, and the experience of midlife. For example, women were asked: "How would you describe your health these days?" "Has your health changed in the past 2 years? What did you notice? (Can you tell me a little more about what you noticed? Mainly general changes or something specific?)" "Do you have a chronic condition?"

The surveys began with general demographic information, then included open-ended questions about general health and changes in health. After collecting information on reproductive history, the symptom checklist was administered. This was followed by open-ended questions about which symptoms were most bothersome, and then questions specific to the management of menopause. In other words, some of the qualitative results were collected prior to the checklist results, and some were collected after the checklist results. Because of our focus on symptoms at midlife, we excluded from analyses symptoms volunteered in reference to past pregnancies or medication side effects, including contraceptives or hormone therapy.

Our assumption was that the extent of somatization could be assessed by exploring connections among symptoms. Our explicit interest was in the link between physical and emotional symptoms. We defined somatic symptoms as those that are general and physical, not necessarily attributed to specific organic causes but potentially present in a number of medical conditions. These symptoms include shortness of breath, chest pain, palpitations, GI complaints, numbness, dizziness, fatigue, headaches, numbness, and body pain. Each of these symptoms may be a means to manifest emotional distress.^{13,47,48} We defined emotional symptoms as anxiety, depression, and nervousness or nervous tension. Other emotional symptoms that were volunteered by women included: anger, sadness, irritability, feeling upset, tense, having mood changes, worried, impatient, and being stressed.

The concept of stress offers a special problem because some women talk about stress, particularly stress at work, as an external phenomenon that causes their symptoms. Other women refer to "being stressed" or "emotional stress" as a symptom that they experienced. Thus, the meaning of the word "stress" is not as comparable, woman to woman or site to site, as are words such as "headache" or "dizziness". Stress was not included in the symptom checklist; therefore it is examined in the qualitative, but not quantitative, results.

We wanted to investigate the links among symptoms by considering both the statistical associations among checklist responses, and the way that women themselves grouped symptoms in answer to open-ended questions. Hence the analysis proceeded along two lines. Reported symptoms from checklists were compared across countries using factor analyses⁴⁹ and Chi-square analyses. We also retrieved all statements, wherever they appeared in the

interview, if they referred to symptom experience. Nudist software was used to code and search women's textual responses.

In the textual analyses, we calculated the frequencies of women who associated a given symptom with other symptoms, where women referred to experiencing symptoms simultaneously or to the belief that some symptoms caused others. We focused on instances where physical and emotional symptoms were linked, and were attentive to so-called folk etiologies, i.e., how women explained the cause of their symptoms. For example, three women in Beirut described dizziness as caused by nerves, and in Massachusetts, one woman stated, "I get dizziness when I am anxious and nervous."

Although the textual analyses yield relatively low numbers when instances are converted into frequencies, we believe that these spontaneously mentioned connections have special value beyond the numeric, because they express the way women experience symptoms, and provide insights into perceived links among the physical and emotional/mental dimensions of experience. Another advantage of analyzing symptom frequencies drawn from quantitative checklists along with qualitative, open-ended responses, is that we can compare discrete biomedically defined symptoms with statements that may express lay perceptions of health in a more diffuse manner.

Results

Differences in sociodemographic, health, and lifestyle characteristics of the 4 samples are presented in Table 2. Levels of education and health status were highest in Madrid and Massachusetts. Smoking was highest in Beirut (57%), and exercise highest in Madrid and Massachusetts (66% and 63%, respectively). Use of hormone therapy ranged from 6% in Rabat to 20% in Massachusetts.

Previously conducted analyses of symptom frequencies⁴¹ have shown that fatigue, headaches, joint pains, and nervousness/impatience are among the most frequently reported symptoms, with more than 45% of respondents in three out of four sites reporting those symptoms. The relatively high frequencies of somatic and emotional symptoms gathered by a structured checklist suggest that an analysis of symptom report using the associated qualitative data should be fruitful. Statistically significant differences in somatic symptom frequencies across the 4 sites are shown in Table 3. The table also shows that reported frequencies among women in Beirut are higher for fatigue, GI complaints, numbness, palpitations, shortness of breath, depression, and anxiety compared to each of the other 3 sites. This is a point to which we return later.

Factor analyses were also applied to examine how checklist physical and emotional symptoms clustered. Results, shown in the first row of Table 1, labeled DAMEs, demonstrate how factor analyses capture clusters that are unique to each country. The somatic symptoms that clustered with emotional symptoms were: fatigue, chest pain, dizziness, and GI complaints in Massachusetts; headaches and palpitations in Madrid; and fatigue/weakness in Beirut. In Rabat, palpitations, chest pain, shortness of breath, numbness, and joint pains clustered with anxiety, nervousness and depression.⁴⁹

We now consider the qualitative results for each site. The frequencies of women who refer to somatic symptoms in textual responses are calculated and presented in Table 4. For each country, we also present the number of women out of the subtotal who clustered a given symptom with other symptoms in answer to open-ended questions, with special attention given to emotional symptoms. For example: in Beirut 27 respondents referred to shortness of breath or difficulty breathing; of those, 12 (44%) mentioned other symptoms in the same response (including hot flashes, nervousness, palpitations, chest pain, fatigue, nausea, pain

in legs, and shaking hands. In this example, only emotional symptoms are listed in the Table (although hot flashes, palpitations, and other somatic symptoms were mentioned), consistent with our interest in identifying somatic symptoms that may blur the boundaries across physical and mental syndromes.

Central Massachusetts

Shortness of breath, chest pain, palpitations, GI complaints, and numbness were each reported on symptom checklists by about one woman in four (Table 3). In factor analyses using checklist responses, chest pain and GI complaints clustered with anxiety and depression;⁴⁹ however, women did not make the same grouping themselves. In open-ended responses women attributed cardiovascular symptoms to specific medical causes such as radiation therapy and asthma (shortness of breath), medications (chest pain, palpitations), and to life style causes such as riding a bike or smoking (shortness of breath). Table 4 shows that of the 8 women who spoke about shortness of breath, only one associated the symptom with another symptom (a racing heart). Chest pain and gastric reflux were not clustered with any other symptoms. Palpitations were mentioned by 5 women, but only one associated it with another symptom (hot flashes). The following quote is illustrative of how women speak of these symptoms.

“Lately I'm short of breath when I ride my bike. My heart seems to race.”

Overall, women's statements about shortness of breath, chest pain, palpitations, and GI complaints tended to attribute symptoms to mechanical causes. Numbness was somewhat less straightforward; two women mentioned it, one of whom linked it with back problems, nervousness, weight gain, and stress:

“[My health is] not as good. Before I got married 4 years ago, I ate better and was thinner. Since then I gained a lot of weight, I have gotten nervous[...] I had back problems, numbness in foot and ankle. I have had lots of stress since I got married. My husband has improved now.”

Dizziness was reported by 24% of women in the checklist, and by 5 women in response to open ended questions; 2 attributed it to nervousness or anxiety

“I get dizziness when I am anxious and nervous. Makes me unable to function.”

“Granddaughter has lived with me for 8 years. Daughter now wants her to live with her. This is causing lots of emotional stress [...] I worry about dizziness. Once I felt I was going to pass out at church. This was the most I've been bothered by these symptoms.”

Fatigue was reported on the checklist by nearly half the women, almost twice as frequently as shortness of breath, chest pain, palpitations, numbness or dizziness. Nineteen women mention it in the texts; of these, 7 mentioned other symptoms along with fatigue, including anxiety, depression, and impatience (1 each). Women attributed fatigue to specific reasons, including sleep disturbances, work, medications, and caregiving responsibilities.

“Fatigue because I over do it. I'm the only one at home, so I have to do everything.”

“If hot flashes continue I may talk with my doctor. Would like to do something about the sleep disturbances. In the afternoon I get so tired I could fall asleep standing up. I relate some of the fatigue to my work.”

Headaches were the most frequently reported somatic symptoms, both in response to the checklist and in qualitative responses. Of the 45 women who mentioned headaches in the texts, 13 mentioned other symptoms as well, including anxiety, depression, and being

stressed. Headaches were attributed to medications, migraines, fibromyalgia, allergies, job stress, and menstruation.

Joint pain was the second most common somatic symptom in both quantitative and qualitative responses. Of the 29 women who mentioned it in the texts, 9 mentioned other symptoms as well, including emotional problems and anxiety. Joint pain was attributed to fibromyalgia, inactivity, and stress.

“Bothered by joint pain the most and not being able to concentrate. Hard to be in pain so often.”

“Joint pain, hard to function, can't do the things I want to do and this makes me depressed.”

“Emotional problems due to stress, and joint pains”

In general, women in Massachusetts did not often cluster somatic symptoms with emotional symptoms. Where women connected symptoms or mentioned causes, as with fatigue and headaches, they did so in relatively clear and specific ways. Only dizziness grouped with anxiety and depression in factor analyses and was also spoken about in somewhat more diffuse language, suggesting that of all the symptoms, dizziness is the one most likely to express some emotional distress.

Madrid

Women in Madrid clustered very few symptoms with shortness of breath, chest pain, dizziness, fatigue, GI complaints, and numbness. Shortness of breath was attributed to heat, smoking, walking uphill, and climbing stairs. Chest pain was attributed to heredity and stress. Dizziness was attributed to low blood pressure, swelling in ears, and cervical spine. Fatigue was attributed to asthma and climbing hills. Gastric complaints were attributed to diet and bacteria. Numbness was attributed to winter and poor blood circulation.

“I used to walk, but now I can't because I run out of breath.”

“Normally I feel oppression in my chest due to stress.”

“Chronic gastritis. I take good care of my diet.”

“What I do feel is a little tired. I feel fatigue when I go up a hill. I should lose some weight and do more exercise.”

Headaches were the second most frequent somatic symptom listed in the checklist (Table 3) and the top symptom mentioned in qualitative responses (n=65). Some headaches were described as migraines and associated with nausea or vomiting, but non-migraine headaches were considered normal and easily dealt with. Non-migraine headaches were attributed to menstruation, ovulation, menopause, cervical spine, and sugar levels. Although headaches clustered with anxiety, depression, and nervousness in factor analyses, in qualitative responses only 8 women mentioned symptoms along with headaches, and nervousness and depression were each mentioned just once.

“I asked him about the headaches and the hot flashes, and he said they were normal symptoms. [...] Headaches, migraines that cause vomiting, and pain in my joints because of all the weight I lift: my parents.”

“None of them bother me specially. If anything, the headaches... it's nothing that can't be fixed with an aspirin.”

“We all talk about the same thing: the headaches, the passing of the years.”

“I want to say that my nervousness problem and my depression at the same time make me have a foul mood. The loss of memory has come up lately. [...] When I'm going to go to sleep I get a headache.”

Joint pain was the most common symptom reported by checklist, and the second most common qualitative complaint. Eight out of the 36 women who mentioned joint pain mentioned other symptoms as well, but there was just one mention of mood changes. Joint pain was attributed to fibromyalgia, arthritis, lupus, climate change, lifting too much weight, and age.

In general, like women in Massachusetts, women in Madrid did not cluster somatic symptoms with emotional symptoms in open-ended responses, and their statements attributed symptoms to specific, largely biomedical causes.

Rabat

Approximately one in four women in Rabat reported shortness of breath, chest pain, palpitations, and/or numbness within the month prior to interview (Table 3). The frequency of GI complaints was somewhat lower – the lowest reported in all sites. When women talked about these five symptoms in open-ended responses, they listed almost no other symptoms. These somatic symptoms did not cluster with mental/emotional symptoms, implying straight-forward causation. Treatments for gastric problems included antacids, charcoal, heat, and fiber.

“When there's dust in the air. I don't breathe well.”

“[It is due to] tuberculosis of the lungs.”

“[My heart] beats loud like a watch”

“Before I go to sleep, my heart beats fast.”

Dizziness was mentioned when women were asked “how do women feel when they reach menopause?” Dizziness was associated with hot flashes, sweating, and anxiety and was attributed to the imbalance of changing hormonal status rather than to emotional distress. This is in contrast to mentions of headache or fatigue, which were linked with emotional symptoms (Table 4).

Fatigue, the most common symptom in quantitative and qualitative responses, was attributed to poverty, hypertension, getting old, lack of exercise, and diabetes. Fifty-one women talked about fatigue, and 45% combined fatigue with other symptoms including anxiety, depression, nerves, stress and worries. Statements about fatigue indicated a general sense of physical and emotional exhaustion related to health problems, but perhaps to an even greater extent, to the difficulties of life.

“Work exhausts me. But I don't have any illness/disease.”

“Fatigue; exhaustion; tiredness everything is broken”

“Fatigue; exhaustion; tiredness from stress/worry over children.”

“Fatigue; exhaustion; tiredness--all the sickness has accumulated in me”

“Fatigue and worries of the world have all gathered up on me. Misery.”

“My heart is weak/tired, it's cutting the years out of my life. My husband is also weak/tired, he won't buy me any medication. Hope lies in the hand of God.”

Headache, the second most common symptom among women in Rabat, was attributed to life stresses (children, husband's death, radio and TV, lack of means) as well as hypertension and

menstruation. Of the 45 women who mentioned headaches, 40% mentioned other symptoms, including anxiety and nervousness.

“Nervous, headaches--I'm constantly worried about the boy [her son] who left. I have no idea where he is, I don't even know if he's alive or dead.”

In sum, it appears that in Rabat, shortness of breath, chest pain, GI complaints, palpitations, and numbness are not connected to emotional suffering; dizziness, fatigue and headaches are the more likely ways for women to communicate psychosocial distress.

Beirut

The texts transcribed from the responses of women in Beirut show multiple connections across physical and emotional symptoms, to a greater extent than in the other 3 sites. The same was true of factor analyses using checklist symptom frequencies. In the first factor, shortness of breath, chest pain, palpitations, GI complaints, numbness, headache, dizziness, and joint pains clustered with anxiety (factor score .344) and depression (.360). Fatigue clustered even more strongly with anxiety (.533), depression (.420), and nervousness/impatience (.477) in the second factor.⁴⁹

Of the 27 women who mentioned shortness of breath in qualitative answers, 12 clustered with other symptoms, including nervousness. Shortness of breath was attributed to asthma, allergies, air pollution, the flu, heart trouble, and physical exertion, but also to anger, war, and emotional shocks.

“About 5 months ago I saw a generalist since I was anxious and nervous, which causes blood obstruction and consequently this leads to shortness of breath.”

“Four months ago I entered the emergency room. I had a “crisis” which they thought was a heart attack but it turned out to be a nervous breakdown. I felt short of breath, nauseous, heart palpitations, high blood pressure and my hands started shaking”

“I have been feeling short of breath often lately because I have been having heart pain for the past 7 years. This is due to having been shocked at the time about my husband.”

“It was since I got pregnant with the boy that I started feeling like suffocating and when I get angry I feel that my lungs close and that I can't breathe anymore”

“Around a month ago, I was so sad that I difficulty breathing, and my heart started beating fast.”

Unlike the findings in Rabat and the U.S., chest pain was linked to other symptoms: 4 of 12 women mentioned other symptoms. Chest pain was attributed to heart problems, cold water, and smoking.

“I am just psychologically tired. I am less active than before. I had chest pain for some time. I did an EKG [...] but there was no problem. It was from nervousness.”

Similarly, 15 of the 37 women who mentioned palpitations also mentioned other symptoms. Palpitations were attributed to climbing stairs, hypertension, thyroid trouble, heart trouble, weight gain, cholesterol, nervousness, and the war. Among the 15 women who mentioned numbness, 6 clustered numbness with other symptoms. Numbness was attributed to excess body weight, blood vessel problems, carrying too much weight, thyroid trouble, washing clothes with detergents, and nerves. Nerves or nervousness was mentioned in association with all of the somatic symptoms studied in Beirut.

The most frequent symptoms mentioned in qualitative responses by women in Beirut were GI complaints (n=72), headaches (n=64), and fatigue (n=40). Twenty-eight percent of women who mentioned some gastric or intestinal distress mentioned other symptoms or emotional states, including anger, nervousness, and sadness. Thirty-six percent of women who mentioned headaches clustered headaches with other symptoms, including nerves. Almost 75% of those who mentioned fatigue clustered fatigue with other symptoms, including anger, depression, and nervousness.

GI problems were located in the throat, “at the entrance”, “at the top”, and “in the corner” of the stomach, in the intestine, and in the colon. Symptoms included burning, bloating, flatulence, pains, fever, burping, constipation, nausea, spasm/colic, diarrhea, and feeling “as if my stomach were torn apart.” In terms of folk etiologies, women talked about “laziness” in the digestive system so that “food stays and stagnates on the top of my stomach.” Other causes of gastric problems included particular foods, hernias, ulcers, infection, inflammation, parasites, insufficient chewing from having had teeth removed, pain medication, fasting for Ramadan, the war, and the climate. Women envisioned their stomachs as “nervous”, “fragile”, “sensitive”, “tight”, “stressed”, and “with no fluid”. “Stomach nerves” was a frequent complaint. In general, GI complaints were attributed to both physiological/mechanical and emotional causation.

“I have ‘asabi [nerves] in the stomach which was caused by a suicide attempt after my first daughter was born and I took a whole box of Aspirin.”

“Pain in intestines – no spices or tomatoes and sadness isn't good for me.”

“Stomach ache since the war and until now when I am nervous At home I feel OK but I suddenly get sad.”

“Ulcer in my stomach due to garlic and to the fact that I was nervous.”

“I have nervous crisis in my stomach when I am angry.”

“If I feel happy or sad, my stomach aches.”

“Nervous problems that were due to the war resulted in a stomach ache.”

Headaches were attributed to tension, hypertension, poor eyesight, the water, the start of winter, problems in neck vertebrae, “tired nerves,” work, the economic situation, and the war.

“I have had headaches for a long time, since Gaza. It happened because of nervousness and worrying, and now it increased because of the neck pain. It could be due to my heart or my eyesight.”

“Some said [it was] migraine and some said it was due to anxiety and the charged atmosphere that I live in [...] it's true that it's from nerves and anxiety.”

“I saw a generalist 6 months ago. I had dizziness and hypotension, and I was getting tired easily. I cannot rest; I work a lot. I always have a headache. I am responsible for two households: mine and my mother's. I cannot handle both. And I do not have anyone to help me.”

“But nowadays my body is very weak and my head nerves pain me. I feel fatigue in my body and a headache. The children's problems [...] prevent me from getting better.”

Fatigue was attributed to illness, husband's death, children, worsening economics, unemployment, overwork, weight gain, and diabetes.

“My husband had cancer, I suffered a lot caring for him. After his death, the fatigue and sadness appeared.”

“When I think of my deceased son and of my other son who is away -and I'm very emotional- I cry constantly. Fatigue and routine.”

Dizziness was mentioned by 20 women, of whom 10 clustered dizziness with at least one other symptom (including nervousness). Dizziness was attributed to ear inflammation, flu, pregnancy, hypertension, hypotension, alcohol use, heavy bleeding, a past motorcycle accident, general infection, and nerves.

“One week ago I had some tests and it was found that I have a headache and a continuous dizziness due to nerves... A week ago I went to the hospital. They have a big file for me there regarding the nervousness I have. I have had many examinations, cardiogram and x-rays and they all told me that I have nervousness and that my emotional state is very tired.”

Of all of the somatic symptoms examined, joint pain may be the least likely candidate for communicating emotional or social distress. Joint pain was associated with nervousness, rheumatism, calcifications, varices, being overweight, physical exertion, and the war.

“Every month or two, I see the doctor [for a new prescription]. Because I have strong pain in my joints. All the pain I have is due to the war.”

“I have many chronic conditions: joints pain due to nerves, since 1980, blood pressure, lipids and cholesterol.”

“I have varices, arthritis, an ulcer after I took the medicine for the disk, as well as kidney problems and allergy in my chest.... I've had the arthritis since [the] war. The varices started during the Invasion [...]I took injections in my joints.”

Compared with women in the other three sites, women in Beirut were more likely to report somatic symptoms in qualitative responses. They were more likely to associate somatic symptoms with emotional symptoms.

Discussion

This study found considerable consistency between quantitative and qualitative responses. In answer to questions about health and bodily changes at midlife, women volunteered the same somatic and psychological symptoms that were included in the checklist. This can be seen by comparing Table 3 (checklist symptoms) with Table 4 (volunteered symptoms) and actual sentences recorded (above).

This study also found consistency between the frequency of symptoms marked on the checklist and the frequency of symptoms spontaneously mentioned by women. For example, in the U.S., the most frequent symptoms were headache, joint pain, and fatigue, which correspond with the 3 most frequent symptoms given in qualitative responses. In Morocco the concordance extended for 5 symptoms: fatigue, headache, joint pain, dizziness, and palpitations. Although there are a few inconsistencies (for example the rank of headaches in checklist and texts among women in Madrid), overall, the consistencies between quantitative and qualitative data strengthen the case that qualitative results can be used as valid measures of women's somatic experiences.

Although the number of volunteered responses is small, it is apparent that the associations between somatic and emotional symptoms vary across countries. For example, fatigue clustered with depression or anxiety in Beirut and Rabat, but not in Madrid. Palpitations and GI complaints were not associated with emotional symptoms except in Beirut (Table 4). If

our assumption is valid that the best candidates for idioms of distress are the vague, persistent bodily symptoms that cluster with emotional symptoms, then it is clear that fatigue represents such an idiom in Beirut and Rabat, while cardiovascular and GI symptoms may play such a role in Beirut. These results are consistent with the notion, suggested by some studies, that the expression of feelings and the acknowledgement of somatic symptoms and anxiety are acceptable in some cultural contexts, though further research is needed to examine how this varies within cultures and by gender.

Comparisons between quantitative (checklist) and qualitative responses showed intra- as well as inter-country differences. In factor analyses using symptom checklists in the U.S., fatigue, dizziness, chest pain and GI complaints clustered with emotional symptoms,⁴⁹ however, in qualitative analyses, women did not group together chest pain or GI complaints with psychological symptoms. Instead, chest pain and GI complaints were explained in mechanical terms. Even though the symptoms correlated statistically, women did not make the connection themselves when answering questions about health at midlife. In the absence of objective measures, it is difficult to know which method of symptom clustering yielded the more “accurate” way of categorizing the symptoms.

In Spain, headaches and palpitations clustered with emotional symptoms using checklist data;⁴⁹ however, there was no strong evidence from qualitative responses that somatic symptoms were used to communicate psychosocial stress: of the 65 women who mentioned headaches, only one participant combined shortness of breath and anxiety, and only one participant combined headaches with depression and nervousness. Mood changes were each combined once with chest pain and joint pain. In Lebanon, fatigue/weakness clustered most strongly with emotional symptoms using checklist data;⁴⁹ the qualitative responses indicated that women experienced three somatic symptoms, including fatigue, to be associated with anxiety and nervousness. This was in contrast to our expectation, based on literature about somatization in less developed countries and the results of our factor analyses, that Rabat would be the richest source of associations between anxiety, depression, and somatic complaints. Instead, in Rabat, only headache, fatigue, and dizziness were clear candidates for idioms of distress.

The frequency of complaints demonstrated a general correlation between checklist and open-ended responses. However, a comparison of how symptoms clustered together showed that statistical groupings based on checklist data do not necessarily capture how women themselves notice and describe symptom clusters. Most notably, the prominence of GI complaints in Beirut and their relationship to nervousness, anger and sadness, were not captured by factor scores. Instead, factor scores suggested that fatigue would be the best candidate for communicating emotional distress. These findings support the gathering and analysis of both qualitative and quantitative data to identify culture-specific forms of somatization.

The results of this study are consistent with another analysis of the data which used quantifiable responses about overall health and textual data from women's statements about health.⁵⁰ The most important symptoms were nonspecific—tiredness, anxiety, nervousness and depression—and when women spoke of their health, they often referred to the social context of their lives, including war and insecurity in Beirut, poverty and unemployment in Rabat, and family worries and burdens in all sites.

The results of this study do not support the claim that non-Westerners tend to somatize their distress to a greater extent than Westerners, since women in Rabat, the least medicalized site, did not link together somatic and emotional symptoms any more often than women in Massachusetts or Madrid. We did however note that for women in the two sites with best

access to health services (Madrid and Massachusetts), discourse about symptoms tends to be more straightforward, more clinical, and less diffuse than in the other two sites (Beirut and Rabat).

Symptoms at midlife are associated with a wide range of sociodemographic, lifestyle, and health measures.^{41,51,52} The central nervous system can mediate the effects of psychosocial factors on the production of pain, dizziness and fatigue.¹³ Joint pain could be due to hormonal changes;⁷ infections may be associated with fatigue;⁵³ GI symptoms may be caused by the effects of stress hormones.⁵⁴ This study suggests that culture may further modify symptom experience by discouraging, for example, the use of chest pain, shortness of breath, numbness, and GI complaints to express anxiety or nervousness in Rabat, but encouraging the use of a wide range of somatic symptoms to express distress, particularly in relation to the war, in Beirut. There are culturally different ways of expressing one's bodily experience. The results of this study suggest that the sociocultural context of Beirut lends itself to the somatization of psychological stress and trauma to a greater degree than is demonstrated in Rabat, Madrid, or central Massachusetts.

Limitations of this study include small sample sizes and the post hoc nature of the study, which was not specifically designed to investigate somatic symptoms, did not use a standardized instrument specific to somatization, and could not assess which symptoms were medically unexplained. Also, open-ended responses present a challenge in their use of closely related terms. Women described feeling “nervous,” “nervousness” and “nervous tension.” A checklist removes ambiguity of meaning by simply asking about “nervousness” (yes/no). In some of these situations, we need more ethnographic data to know if these words have the same or different meaning.

However, the study does have several advantages: the same questionnaire was used in the four sites; local investigators were well-versed in the culture of each country; translations were done by speakers fluent in Arabic, French, Spanish, and English, and the design makes it possible to triangulate qualitative as well as quantitative data. The results of qualitative analyses suggest that symptom clustering may have implications for patterns of health care utilization, and that physicians may need to be attentive to the emotional component of some symptoms among their patient population, for example dizziness in Massachusetts, fatigue, headaches, and dizziness in Rabat, and GI and cardiovascular symptoms in Beirut.

Conclusion

The four country study presented here documents some of the connections that link somatic and emotional symptoms, as well as variation across cultures in the ways that psychosocial distress may be communicated through certain somatic symptoms. While the statistical groupings by factor analyses give a general picture of symptom relationships, more fine-grained qualitative analyses show how individuals within the population may group symptoms to describe their suffering or discomfort at midlife. These results have implications for patterns of health care utilization.

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Site ^{source} N Age range	Somatic symptoms associated w/psychological symptoms ^a	Psychological symptoms associated w/somatic symptoms ^a	Number of factors (number of symptoms)	Somatic symptoms in list
	Factor 7: Dizziness	Nervous tension Feeling panic		Headache Numbness Low back pain Shoulder stiff Edema ^h
Israel WHiMS⁴⁰ Jewish residents, Russian immigrants, Arab Israelis n=814 45-64	Short of breath, Chest pain, Dizziness, Fatigue, Ache back/ neck ⁱ	Nervousness	2 ^j (15 ^k)	Short of breath Chest pain Dizziness Fatigue/weary Heartburn Headache Ache back/neck ^m

^a Using the same factor loading cutoff as the authors of the article (e.g., > 0.40)

^b Symptom presence/absence

^c Four point scale (0=none, 3=severe or extreme)

^d Other somatic symptoms in factor analyses: pins and needles in hands and feet, clumsiness

^e Other somatic symptoms in factor analyses: weight gain, painful breasts, skin crawling

^f Japanese: headaches only; Caucasian: headaches and stiffness only

^g Frequency-severity data (total = 10 point scale)

^h Other somatic symptoms in factor analyses: hypoesthesia, ringing in the ears, rush of blood to head, head feels heavy, exhaustion

ⁱ Russian immigrants: Short breath, chest pain, fatigue only

^j Combined prevalence and 4 point severity scale

^k Hot flashes excluded

^m Other somatic symptoms in factor analyses: weight gain/loss, eye irritation, dry skin, abdominal pain

Table 2

Sample characteristics, DAMeS study^a

	All sites	Beirut N=301	Rabat N=299	Madrid N=300	Mass. N=293
Mean age at interview in years (s.d.)	50.0 (3.1)	50.0 (2.9)	49.5 (3.3)	50.7 (3.1)	49.9 (3.1)
Level of education (%)					
Primary or less	27	30	72	8	1
Intermediate	32	45	14	39	30
Secondary/vocational	18	11	9	26	28
College or higher	23	15	5	28	41
Health (%)					
Good, Very good, excellent	62	43	30	85	90
Fair	24	35	42	12	9
Poor	14	22	28	3	2
Currently Smoke (%)	28	57	1	34	21
Currently Exercise (%)	50	42	12	66	63
Mean parity (s. d.)	3.9 (6.2)	6.8 (11.2)	5.3 (2.8)	1.7 (1.2)	1.9 (1.4)
Menopause status (%)					
Premenopausal	40	46	35	43	37
Perimenopausal	13	9	19	10	13
Naturally postmenopausal	37	33	43	38	34
Surgically postmenopausal	10	13	2	10	16
Use Hormone Therapy (%)	12	15	6	10	20

^a All differences across sites significant (p<0.001)

Table 3
Percentages of somatic and emotional symptoms across 4 countries, DAMeS Study^a

Checklist Symptom	Beirut N=301	Rabat N=299	Madrid N=300	Massachusetts N=293
Somatic symptoms				
Shortness of breath	39.6	30.1	20.7	24.0
Chest pain	21.2	24.7	15.7	17.4
Palpitations	46.9	34.1	28.7	28.8
Dizziness	37.8	37.5	25.3	23.9
Fatigue	78.6	61.5	41.7	45.7
Gastro-intestinal	37.5	17.4	27.3	24.2
Headache	52.4	57.5	47.3	58.2
Joint pain	43.9	53.8	56.3	53.9
Numbness	51.3	28.1	39.7	21.5
Emotional symptoms				
Depression	41.3	28.1	25.7	32.1
Anxiety	57.8	44.1	26.0	37.5
Impatience/Nervousness	68.8	42.5	61.7	59.1

^a All differences across countries are significant, $p < 0.01$ for all symptoms, except chest pain and headache ($p < .05$). Bolded values indicate symptom frequencies that are significantly different from the frequencies reported in each of the other three countries.

Table 4
Clustering of somatic symptoms and emotional symptoms in qualitative responses,
DAMeS study

	Beirut	Rabat	Madrid	Massachusetts
Shortness of breath	12/27 ^a Anger (1) Nervousness (1) Nervous breakdown (1) Worries (1)	0/2	2/16 Anxiety (1)	1/8
Chest pain	4/12 Nervousness (2) Psychologically tired (2)	0/4	2/11 Mood changes (1) Oppression in chest due to stress (1)	0/7
Palpitations	15/37 Irritated or agitated (1) Nerves (1) Nervous (2) Nervous breakdown (1) Nervousness (5)	2/10	(No data)	1/5
Dizziness	10/20 Due to nerves (1) From my nerves (1) Nerves (1) Nervousness (1)	11/12 Anxiety (4) Nervousness (1)	3/15	2/5 Anxious(1) Emotional stress (1) Nervous (1)
Fatigue	29/40 Anger (1) Depression (1) Nerves (1) Nervous (1) Nervousness (1) Not happy (1) Sadness (1) Very emotional – cry constantly (1)	23/51 Anxiety (2) Depression (1) Nerves (1) Nervous/anxious (1) Stress/worry (1) Worries (1)	0/5	7/19 Anxiety (1) Depression (1) Impatience (1)
Gastrointestinal complaints	20/72 Anger (3) Happy or sad (1) Nerves (2) Nervous (2) Nervous crisis in my stomach (1) Nervous problems (2) Nervous stomach (1) Sadness (2) Stomach nerves (2)	0/6	0/14	0/2
Headaches	23/64 Anxiety (1) Lack of psychological comfort (1) Nerves (4) Nervous (1) Nervousness (4) Sadness (2) Tired nerves (1) Worrying (1)	18/45 Anxiety (1) Impatient (1) Nervous (1) Nervousness (2) Nervous tic (1)	8/65 Depression (1) Nervousness (1)	13/45 Anxiety (1) Being stressed (1) Depression (1) Stress at job (2)
Joint pain	9/33 ^b Nerves(1) Nervous/angry (1) Nervous/fear (1) Nervousness (1)	10/15 Upset/tense (1)	8/36 Mood changes (1)	9/29 Anxiety (1) Depressed (1) Emotional problems due to stress (1) Stress at work (1)
Numbness	6/15 ^b Irritated (1) Nervous (1)	0/1	2/4	1/2 Nervous (1) Stress (1)

^a Each cell gives the number of women who gave a symptom in an open-ended response (denominator), the number of women who clustered that symptom with other symptoms (numerator), and the emotional symptoms and references to stress that were clustered with that symptom.

^b There are more references to “nerves” in relation to joint pain and numbness, but they refer to sensory/motor nerves rather than emotional nerves.