

Physician-based estimates of medically unexplained symptoms: a comparison of four case definitions

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Background. Medically unexplained symptoms (MUS) are considered a common occurrence in medical settings, although definitions, methodologies and resulting prevalence rates for MUS vary widely between studies.

Objectives. The objective of the present study was to characterize physicians' estimates of MUS, including clinically significant MUS, and to demonstrate in a single study how estimates vary based on the definition used.

Methods. Two hundred and thirteen physicians completed an online questionnaire regarding the number of patients who present to their clinic with MUS. To reduce memory biases, participants reported on the number of patient seen in their most recent clinic day who met increasingly restrictive case definitions for MUS. Weekly estimates were also obtained.

Results. The least restrictive definition yielded an estimate of 11%. When certainty criteria were added to the definition of MUS, the estimate decreased considerably to 4%. Approximately 3% of patients were estimated to have chronic MUS that affected their daily functioning or caused significant distress (i.e. psychologically significant MUS), and only half of these, 1.5%, were assigned a diagnosis of somatoform disorder or factitious disorder. The proportion of MUS cases accounted for by malingering was 18%.

Conclusions. The present study documents significantly lower estimates of MUS than chart review studies. However, our results suggest that a significant proportion of the total number of patients who present with MUS have abnormal illness behaviour associated with significant impairment or distress. Despite physicians' recognizing significant distress and dysfunction in these cases, formal diagnoses of somatoform or factitious disorder are rarely assigned.

Keywords. Diagnosis, factitious disorder, malingering, medically unexplained symptoms, somatoform disorder.

Introduction

A common occurrence in primary care,^{1–6} medically unexplained symptoms (MUS) are defined as patient-reported physical symptoms for which physicians cannot find corresponding physical pathology or for which the underlying physical pathology does not adequately account for the patient's description of symptom severity or disability. Published prevalence rates for MUS in primary care range from 11%⁷ to >60%,³ and most work in the field accepts an estimate of 20%–30%. But what are we to make of these astronomical rates of MUS?

The studies upon which these rates are based have applied widely varying definitions of MUS, used several different sources of data (e.g. archival data, retrospective chart reviews, case series, physician surveys,

patient surveys) and employed diverse procedures of operationalizing MUS. For some studies, the level of analysis is patient visits, whereas for others, it is patients. Few studies that report rates of MUS explain the purpose for gathering this information or link that purpose to the researchers' choice of definitions, data sources or methods. However, the studies often leave the impression that the rates of MUS represent the extent of clinically significant illness behaviour problems that adversely affect the lives of the patients and require psychosocial intervention.

There are several symptom presentations that might meet liberal definitions of MUS but do not reflect an underlying illness behaviour problem *per se*. For example, patient-initiated visits for symptoms that vaguely resemble myocardial infarction might represent appropriate use of medical care. However, in

chart review studies, these cases would be coded as MUS. Many other complaints might remain unexplained simply because they are benign and self-limiting, yet these too would be counted as MUS, thus inflating the prevalence rates.⁸

Recently, researchers have begun to question what proportion of MUS reflects serious illness behaviour problems. Several reviewers suggest that only about one in five patients with MUS has a serious abnormal illness behaviour problem that might warrant intervention.^{6,8} Verhaak, Meijer, Visser and Volters used patients as their level of analysis and defined MUS cases as patients with four or more physician contacts for functional complaints with no resulting medical diagnosis. They found a prevalence rate of 2.45%.⁶ In a thorough review of the literature that distinguished among mild, moderate and severe MUS, Smith and Dwamena suggest that ~15% of patients with MUS (roughly 5% of all patients) have problematic illness behaviour patterns and an additional 5% have chronic and seriously debilitating illness behaviour.⁸

Other studies have taken the more conservative approach of defining MUS in terms of the presence of a diagnosable psychiatric disorder, particularly one of the somatoform disorders defined in the Diagnostic and Statistical Manual of Mental Disorders.⁹ There are reasons to believe that this approach significantly underestimates clinically significant illness behaviour problems. In archival or chart review studies, underestimation may result from low awareness of these disorders, low recognition rates,³ or from a reluctance of physicians to code these diagnoses officially.¹⁰ Even without these obstacles, several commentators have summarized data suggesting that the DSM criteria are too stringent and exclude patients who have clinically significant illness behaviour problems.¹¹ Other problems with the literature include a general failure to consider the contribution of malingerers to the estimates of MUS and to consider the contribution of patients whose complaints may appear to be fully explained by organic pathology but which may be self-induced (i.e. factitious illness behaviour).

The purpose of the present study was to more carefully characterize physicians' estimates of MUS in primary care. Our primary aim was to compare a range of case definitions using a single methodology and a single data source. By holding these aspects of the study constant, we hoped to determine the extent to which the definitions matter. Specifically, we sought to capture physician-based estimates of MUS using four increasingly conservative case definitions that represent the range of definitions that have been applied in the MUS literature.

For this study, we used physician reports for our data source, similar to previous studies, which have used physician questionnaires and checklists.^{7,12,13} There are three reasons for adopting this approach.

First, physicians do not always record all information relevant to the issue of MUS in patients' charts. For example, a patient with an unexplained symptom that is probably accounted for by a common disease might receive a formal diagnosis. Yet when asked directly, the physician might identify that complaint as unexplained. Second, not all of a patient's complaints are charted. Medical records for a patient who reports multiple medical complaints may only include one or two complaints. Finally, although a patient might meet criteria for a somatoform disorder or factitious disorder, there are significant disincentives for assigning the diagnosis (e.g. reimbursement issues). We hoped that participants would be willing to report on these cases in this study, even though they might not record the diagnosis formally.

The use of retrospective physician reports can be adversely affected by memory biases. In this study, we tried to reduce memory bias by asking physicians to report on the cases seen in their most recent clinic day who met each of the case definitions. To supplement this count, we also asked them to report on the percentage of cases seen in a given week.

Methods

Participants

Participants were 213 physicians recruited for an online survey via an email announcement sent by their state medical society or by a direct email from the researchers to physicians. A total of 585 recruited physicians clicked on the link to the survey; 259 participants (44%) did not proceed past the informed consent page. Of the 277 participants who began the survey, 213 (36% of all visitors) completed the portion of the survey reported on here. Kruskal–Wallis analysis of variance and chi-square tests were used to assess demographic differences between the participants who completed the survey and those who only completed demographic information ($n = 23$). No significant differences were found between the samples for professional position, years in clinical practice or gender. However, non-completers were younger (mean = 49, SD = 7) than completers (mean = 53, SD = 8), $H(1, N = 204) = 4.18, P < 0.05$.

Sample characteristics

Demographics. Participants ranged in age from 32 to 83 years (mean = 53, SD = 8); 82% were male and 92% Caucasian. Participants came from 42 states and the District of Columbia. Participants averaged 25 years of practice (SD = 9); 89% identified themselves as attending/staff physicians or professors of medicine and 82% reported board certification. Areas of specialization included primary care (60%) and pain management (14%). Comparison of sample

characteristics to the larger population of physicians in the USA (from statistics published by the American Medical Association¹⁴) shows that there are more Caucasians in our sample (82% versus 56%) and fewer females (18% versus 38%).

Procedures

Participants completed the Internet-based questionnaire study by progressing through a series of web pages. After providing demographics and information about their medical training and practices, participants completed a series of questions designed to collect data regarding four different case definitions of MUS (Table 1). At the end of the survey, participants answered questions about how they manage MUS cases. For each case definition, participants were asked to provide information about (i) the number of patients seen on their most recent clinic day who met that definition and (ii) the number of patients seen during an average week who meet the definition. After collecting data on the Level 1 case definition, participants were asked to report the number of those patients believed to be malingering. The remainder of the definitions thus excluded malingering patients.

Results

Physician estimates of MUS

Physician estimates of MUS were calculated for each of the four case definitions. Two estimates were obtained for each of the definitions: a count from the participants' most recent clinic day and an estimate of the weekly average. The estimates discussed in the following section were calculated, respectively, as a percentage of the total number of patients seen on the participant's most recent clinic day and the participant's estimate of the total number of patients seen per week. *T*-tests comparing mean estimates between primary care practitioners and specialists showed no significant differences between the groups. Therefore, all analyses were conducted using the entire sample. Although this finding was somewhat surprising, it is not inconsistent with the existing literature. The range of rates from published studies in primary care (20%–74%) overlaps with the range of rates found in speciality care studies (15%–54%).¹⁵

The 213 participating physicians collectively reported seeing 4159 patients on their most recent clinic day. Applying a 95% confidence interval (CI), the margin of error for the rates of MUS is $\pm 2\%$. This assumes that the patient sample was representative and the physicians were completely accurate. See Table 2 for a summary of the 1-day and weekly estimates. Of the 4159 patients seen, participants reported that 460 (11%) met the Level 1 case definition of MUS. Excluding those believed to be malingerers (105 or

TABLE 1 Case definitions

Level 1	Any patient whose medical complaint was not consistent with or adequately explained by physical signs or routine diagnostic tests performed during the patient's visit: <ul style="list-style-type: none"> ● even if you do not suspect that the unexplained symptom is exaggerated or feigned ● even if you have not yet completed testing to confirm the presence of disease or injury ● even if you are awaiting a consultation from a specialist colleague
Malingering	Intentional production of false or exaggerated physical or psychological signs or symptoms for some external, practical benefit (i.e. avoid responsibilities such as work or military service, obtain medication, disability status, financial gain)
Level 2	Any patient who presented with a medical complaint or symptom and: <ul style="list-style-type: none"> ● you are 95% certain that there is no underlying physical pathology that accounts for the patient's symptom(s) <ul style="list-style-type: none"> ○ OR you are 95% certain that the patient's subjective report of discomfort or disability is grossly in excess of any physical pathology ○ OR you have any suspicion that this patient's symptoms, signs or test results indicate simulated, exaggerated or self-induced medical problems Please do not include patients whose illness/medical problems are a result of intentional lifestyle choices (e.g. smoking, excessive alcohol consumption, risky sexual behaviour)
Level 3	Any patient who has a history known to you, either directly or through your review of their medical records, of presenting with a chronic MUS or with multiple MUS for emotional gratification or some other non-tangible motive <ul style="list-style-type: none"> ● AND this patient's social, occupational or educational functioning is adversely affected by their symptoms <ul style="list-style-type: none"> ○ OR whose symptoms cause the patient significant psychological distress
Level 4	Any patient whom you have formally diagnosed with any of the following disorders: somatization disorder, undifferentiated somatoform disorder, factitious disorder, hypochondriasis, pain disorder and conversion disorder

TABLE 2 Patient-level estimates

Definition	Most recent clinic day		Weekly estimate	
	Total count	% ^a	Total count	% ^b
Level 1 ^c	460	11	1643	10.2
Level 1 ^d	355	8.5	1299	8.1
Level 2	167	4	611	3.8
Level 3	123	3	382	2.4
Level 4	61	1.5	233	1.5
Malingering	105	2.5	344	2.1

^a*N* = 4159.

^b*N* = 16 030.

^cIncluding malingerers.

^dExcluding malingerers.

2.5%), they identified 355 (8.5%) patients as meeting the Level 1 case definition. Applying the Level 2 criterion of 95% certainty that the patient's problem had no adequate medical explanation, participants identified 167 (4%) patients or fewer than half the number who met the Level 1 criteria. The physicians identified 123 (3%) patients who met the Level 3 criteria, indicating multiple or chronic unexplained problems that cause significant psychosocial impairment. Consistent with other studies, physicians assigned a somatoform or factitious diagnosis for only 61 (1.5%) of these patients. In other words, only half the patients who met the sufficient criteria for a somatoform or factitious diagnosis were actually assigned one of these diagnoses.

Weekly estimates for the four case definitions closely match the count of the previous clinic day. On the basis of an estimated 16 030 patients seen on an average week, participants estimated that 1643 (10.2%) meet the Level 1 case definition. Excluding the 344 (2.1%) malingerers, 1299 (8.1%) met the Level 1 case definition. Participants estimated that 611 (3.8%) patients meet the 95% certainty criterion and that 382 (2.4%) experience significant distress or impairment associated with their unexplained symptoms. Again, the physicians collectively estimate that only 233 (1.5%) are assigned a DSM diagnosis.

The distribution of MUS patients seen in the previous clinic day across the participating physicians suggests that the cases were clustered among a small number of participants. Approximately 50% of participants reported seeing one or two MUS patients, accounting for only 12% of all the MUS patients seen across the entire sample. Just over half of all the MUS patients seen were accounted for by only 15% of the participants. Only 22% of the participating physicians reported that they saw no MUS patients on their most recent clinic day.

The distribution of the MUS cases seen in an average week was nearly identical to the distribution of MUS cases seen on the most recent clinic day. For the estimated weekly average, 60% of the participants reported seeing only one to six MUS patients in an average week of clinical work, accounting for just >20% of all the MUS patients identified. Half of all the MUS patients identified were seen by 15% of the participating physicians. Only 5% of participants reported that they see no MUS patients in an average week.

Physician-level analyses

Another approach to analysing our data is to calculate a rate estimate for each participating physician and to examine the distribution of those rates. In addition, this level of analysis allows us to more carefully examine the correspondence between the estimates derived from the 1-day counts and the weekly average estimates. Finally, we can explore physician characteristics that might distinguish those who report higher

rates of MUS among their patients from those who report lower rates.

The distributions for the 1-day and weekly estimates of the four case definitions are described in Table 3. As one would expect, when the data are weighted according to the total number of patients seen, the prevalence rates match the rates obtained from the sample sums. There was substantial variability in the number of patients seen for both daily and weekly estimates. Where appropriate, the analyses described below were conducted with and without weighting for the total number of patients seen. Unless otherwise noted, weighting did not substantively affect the results. For all the estimate distributions, the modal rate is zero and the distributions are positively skewed. The analyses described below were conducted with and without square root transformations to normalize the estimates. Again, unless stated otherwise, the results obtained from the transformed and untransformed rates were not meaningfully different.

Reliability of the estimates. Although the 1-day and weekly estimates correspond well overall, we conducted additional analyses to determine the level of within-participant agreement between these estimates. Correlations between the participants' 1-day and average week estimates ranged from 0.53 to 0.75, and all were statistically reliable (all $P < 0.05$). The same correlations performed on the transformed scores revealed stronger relations, ranging from 0.72 to 0.83 (all $P < 0.001$). Beyond showing that results of the two methods of estimation covaried, we performed paired t -tests to evaluate the mean differences across the two methods of estimation. Analyses of the untransformed scores showed that for all four case definitions, the means of the 1-day and weekly average rates were within 0.5% of one another (all $P > 0.05$). The transformed data indicated that for the Level 4 case definition, the weekly average (mean = 0.58) was significantly greater than the 1-day count (mean = 0.46), $t(212) = 2.27$, $P < 0.05$.

TABLE 3 Physician-level estimates

Definition	Most recent clinic day			Weekly estimate		
	Mean	SD	CI	Mean	SD	CI
Level 1 ^a	10.7	12.3	9.3–12.1	10.2	11.5	8.9–11.5
Level 1 ^b	8.3	10.3	7.1–9.4	7.9	9.9	6.8–9.1
Level 2	3.8	6.9	3–4.6	3.8	7.7	2.9–4.7
Level 3	2.8	5.8	2.1–3.4	2.4	4.8	1.9–2.9
Level 4	1.4	4.1	0.9–1.9	1.5	4.3	0.9–1.9
Malingering	2.2	5.2	1.7–2.8	2.1	4.8	1.6–2.7

$N = 213$.

^aIncluding malingerers.

^bExcluding malingerers.

Correlates of physician-reported estimates. The clustering of MUS cases among a relatively small subset of our physician sample prompted us to investigate characteristics that differentiated physicians who reported high rates of MUS in their practices from those who reported low rates. The participants' age, gender, years of practice and practice setting were unrelated to the rate of MUS that they reported. Nor did the two groups differ with respect to the age, gender or racial composition of their practices. However, participants reporting high MUS rates described their patients as less affluent than those reporting lower rates, $V = 0.23$, $P < 0.01$. Interestingly, the estimate of MUS was related to the number of patients seen per week, $t(211) = 2.38$, $P < 0.05$. Physicians who reported a lower MUS estimate saw more patients (mean = 114, SD = 58) each week than did those who reported a high MUS estimate (mean = 96, SD = 47). With regard to their general approach to mental health issues in their practices, physicians who reported a high MUS estimate, compared to those reporting lower rates, reported greater confidence in their ability to identify mental health issues among their patients, $t(210) = 2.36$, $P < 0.05$ and expressed a bias towards treating mental health issues within the context of their own practices (as opposed to referring out to mental health professionals), $t(210) = 1.97$, $P < 0.05$. Physicians reporting a high MUS estimate in their practices also reported a low level of satisfaction with the quality of available mental health referral sources, $t(210) = 2.88$, $P < 0.01$. The only mental health training variable that distinguished the two groups was participation in continuing education related to mental health. Physicians reporting higher MUS rates were more likely than those reporting low rates to have participated in such programmes, odds ratio = 2.21, 95% CI = 1.28–3.82, $P < 0.01$.

Management and outcomes of patients with MUS

Participants were also asked how they manage patients who present with complaints that they are at least 95% certain are unexplained. On average, participants reported that they provide in-office counselling to approximately half of such patients (mean = 53%, SD = 28%), which results in more appropriate health care utilization by an average of 34% of patients (SD = 29%). Reassurance by the physician that nothing is significantly wrong with the patient was reported to result in positive changes (e.g. improved health care utilization) 'always', 'very often' or 'often' in 44% of cases. Participants reported that they refer 37% (SD = 33%) of such patients to mental health care.

Discussion

Our results suggest that the rate of patient visits associated with MUS, as reported by the treating

physician, is considerably lower than even the low estimates from studies using chart reviews or archival data, just <12%. When the case definition of MUS includes a 95% certainty criterion, the rate is just >7%. Interestingly, almost all the patients who met the Level 2 case definition were judged to have met the Level 3 case definition (6.36%). In other words, almost all the patients about whom the physicians were certain had a MUS were also judged to have multiple or persistent MUS that cause the patient either significant impairment or subjective distress.

One important purpose of studies that estimate rates of MUS is to determine the number of patients for whom MUS is a clinically significant problem that might be addressed through psychosocial intervention. The answer provided by our participating physicians is that >1 in 20 patients may have a psychologically significant problem with MUS. Although we constructed the Level 3 case definition to meet the sufficient conditions for the diagnosis of some type of DSM diagnosis related to excessive illness behaviour, the physicians reported that only half of the patients who met the Level 3 definition were actually assigned one of these diagnoses. This finding adds further doubts about the usefulness of the current DSM scheme for codifying illness behaviour problems.⁵ On a related note, there is a perception that physicians are quick to label patients with MUS and other difficult patients as malingerers. In our sample, physicians suspected malingering in <20% of patients who presented with MUS.

There was a high degree of variability in the rates of MUS reported by our physician participants, which can be attributed in large part to the variability inherent in the short sampling periods that we used. However, some of the variability was accounted for by physician characteristics. Specifically, those physicians seeing fewer patients, and those who reported pursuing continuing education related to mental health issues, reported seeing more patients with MUS. Seeing fewer patients may relate to spending more time with patients, which in turn might facilitate the types of observations that eventually lead to questions about the medical basis for patients' symptoms. Generally, physicians who felt more comfortable with their ability to manage mental health issues, and who preferred to handle these issues within their own practices (as opposed to the use of psychiatric referrals), reported higher rates of MUS. This finding may indicate that physicians oriented towards a biopsychosocial model of primary care may be more attuned to the possibility of MUS among their patients. Another possibility is that these physicians are more likely to keep MUS patients in their practice or even differentially attract these patients.

With respect to how participants manage patients with MUS, in-office counselling provided by the

physician was reported to be employed in half of the cases. This counselling was thought to produce improvements in unexplained symptom reporting and utilization of care in more than one-third of cases. Even more encouraging, participants reported that nearly half of their patients with MUS utilize care more appropriately after they are provided with reassurance from the physician that nothing is seriously wrong with them. Additional data were collected on how participants assess, manage and conceptualize MUS patients. This data and clinical information on specific MUS cases the participants saw on their most recent clinic day will be published in a forthcoming article.

Strengths and limitations

The method used to recruit our sample leaves open the question of its representativeness. Recruitment was limited to physicians in the USA, and it is impossible to know the exact number of physicians who actually received the recruitment message. However, our recruitment message was quite general, and only those physicians who logged on to the study website would know that the study concerned MUS. Thus, it is only at this point where self-selection biases related to the issue of MUS could have been introduced. We know that 36% of those physicians chose to participate.

The sample was biased with respect to race and gender, with an overrepresentation of Caucasian and male participants. There is reason to believe that this bias may impact our results, particularly with respect to gender. A meta-analysis of gender effects in physician communication with patients suggests that female physicians have longer visits with their patients, are more likely to use behaviours that signify an active partnership in the consult, ask more questions related to psychosocial issues and engage in more psychosocial counselling and emotion-focused talk.¹⁶ Furthermore, female physicians are more likely to see female patients, which may skew our prevalence rate estimates as female patients are more likely to report physical symptoms and have unexplained medical complaints.¹⁷

Because we used the 1-day count methodology, the physician estimates of MUS would be inflated if patients meeting the Level 3 case definition made more visits than patients without MUS (i.e. presented more opportunities to be counted). However, our sample of physicians estimated that both MUS patients and patients without MUS made approximately two visits annually. This latter finding is at odds with other studies that have linked moderate to severe MUS with more frequent health care use. We have no data that can resolve this inconsistency, but it may be due to the unreliability of the estimates of yearly visits. It must be pointed out that this problem relates only to patient-level estimates of MUS not visit-level estimates.

The methods we used for this study are similar to those employed in previous studies of MUS in primary care.^{7,12,13} The rate of participation among those who arrived at the study website was 36%, which is typical of survey studies involving physicians.^{18,19} A particular strength of the current study is that our estimates were based on two distinct approaches, an actual count of cases encountered during the participant's most recent clinic day and an estimate of the average number of MUS patients encountered during a typical week. The reliability of our estimates is supported by the fact that the two estimates were moderately to highly correlated across the four levels of the case definition and that there were no mean differences between the rates produced by these two methods.

The consistency within participants across the two reporting formats is reassuring, but we have no check on the inter-rater reliability of the physicians' judgements. It is therefore impossible to know how closely the physicians followed the case definition when evaluating their patients. This is particularly important in light of the high levels of variability for estimates of patients meeting the various case definitions, a phenomenon reported by others who have used physician-based estimates of MUS.^{12,18} It is possible that even though we attempted to craft our case definitions to be as clear and objective as possible, there was enough room for interpretation to cause the widely divergent estimates. A related possibility is that the topic of MUS is somewhat polarizing. Some physicians believe that MUS is a very common and highly irritating problem, whereas others believe that most patients who appear to have a MUS are simply misunderstood. The variability might reflect that physicians at these two extremes were more motivated to participate. However, inspection of the statistical distributions of both the 1-day counts and the estimated average weekly rate failed to show evidence of a bimodal distribution.

Our results are consistent with previous research suggesting that physicians' estimates of MUS are substantially smaller than those derived from other methodologies. This discrepancy suggests either that chart review methodologies are counting phenomena that physicians do not view as problematic or that physicians are under-recognizing MUS. Until a consensus is reached on a case definition, these questions will remain unsettled. This study also supports recent suggestions that the proportion of MUS phenomena that represent clinically significant illness behaviour problems is ~5% to 15% or ~3% to 5% of all patients.^{6,8} Although this figure is a fraction of the much-used 20%–30% figure, the results suggest that a substantial number of patients have illness behaviour problems that, in the opinion of their physicians, adversely affect the patients' lives. Other studies suggest that these patients are at risk for psychiatric illness, iatrogenic

medical illnesses and long-term social and occupational impairment.^{5,20–23} Thus, ongoing research aimed at identification of these patients and effective treatments for psychologically significant MUS is of paramount importance.

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Declarations

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