Developing e-health applications to promote a patient-centered approach to medically unexplained symptoms

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CHAPTER 2

2

User experiences of an online, interprofessional course on medically unexplained symptoms: a pilot study.

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ABSTRACT

Background: Communication between healthcare providers and patients with medically unexplained symptoms (MUS) is frequently hampered by mutual misunderstanding and dissatisfaction. We developed an online, interprofessional course to teach healthcare providers the knowledge, skills, and attitude they need to diagnose and treat MUS in a patient-centered manner. This paper describes the results of a pilot study, assessing healthcare provider satisfaction and self-reported learning gains.

Methods: The course consisted of seven modules of 45 to 60 minutes, one of which designed specifically for mental healthcare providers. Each module contained different types of assignments, based on six cases: videos, discussion boards, reading assignments, polls, and quizzes. For the pilot study, we included 1) medical residents, following the course as part of their residency training, and 2) healthcare providers (general practitioners, medical specialists, physiotherapists, nurses, and psychologists), following the course as continuing vocational training. Throughout the course (at the start, after each module, and at the end), participants were asked to fill out online surveys, enquiring about their learning gains and satisfaction with the course.

Results: At the start of the course, none of the participants (N = 119) rated their level of knowledge on MUS as adequate. At the end of the course, 83% rated their level of knowledge on MUS as adequate and 97% felt that following the course increased their competencies in communicating with patients with MUS (N=60). On a scale from 1 to 10, participants gave the course a mean grade of 8.0. Accordingly, 95% stated that they would recommend the course to a colleague.

Conclusions: According to healthcare providers, this online, interprofessional course is an effective and satisfying way to learn about MUS. Observer- and, in particular, patient-rated outcomes are to be studied in the future.

INTRODUCTION

A substantial proportion of physical symptoms cannot be (fully) explained by a medical disease. This varies from approximately 20-35% in primary care to 30-50% in secondary care (1-4). Even though most medically unexplained symptoms (MUS) are self-limiting, 10-30% of symptoms persist, causing considerable suffering and disability (5). MUS are associated with increased use of healthcare resources and their medical costs rank among the highest of all patient groups (6). This is partly due to repeated referrals and investigations, which are often unhelpful and sometimes even cause iatrogenic damage (7).

Many healthcare providers perceive patients with MUS as "heartsink" or "difficult" (8, 9). Many patients with MUS feel like they are not being taken seriously by healthcare providers (10). Misconceptions are found on both sides, hampering effective treatment and recovery of patients with MUS (11). For example: the labels that doctors use to describe MUS often lead patients to believe that the doctor is suggesting they are "putting on" or "imagining" their symptoms, or that they are "mad" (12). Also, doctors often feel pressurized and uncomfortable, because they feel patients demand (unnecessary) somatic interventions. However, research shows that it is mostly doctors proposing somatic interventions, not patients. If anything, patients with MUS seek for emotional support and reassurance (13). Clearing up these misconceptions calls for better communication and a more patient-centered approach. In recent years, a paradigm shift has emerged to organize care from a patient instead of a provider perspective. This means providing care that is respectful of and responsive to the needs, values, and preferences of individual patients, and actively involving patients in clinical decisions (14). Patient-centered care has many benefits: it improves job satisfaction among healthcare providers, patient wellbeing, treatment compliance, and health outcomes without increased use of healthcare resources (15).

In order to promote patient-centered care for patients with MUS, we have developed an online course, teaching healthcare providers the knowledge, skills, and attitude they need to adequately diagnose and treat MUS. Online learning ('e-learning') is an innovative form of education, which is appreciated for its flexibility, convenience, and self-controlled learning pace (16). The use of different types of media and interactive tools increases motivation and promotes practically applied learning, resulting in more efficient learning experiences (17). In this paper, we describe the results of a pilot study, assessing healthcare provider satisfaction and self-reported effects on knowledge, skills, and attitude.

METHODS

Course Development

MUS experts, educational experts, healthcare providers from various professions (i.e. general practice, clinical psychology, psychiatry, physiotherapy, and various medical specialties), and a patient representative were involved in the development of the course. As a first step, workshops were organized to define the aim of the course, the intended target audience, relevant themes, and learning goals. The Canadian Medical Education Directives for Specialists (CanMEDS) framework (18) was used to link these themes (modules) and learning goals to relevant competencies for medical professionals. Subsequently, we established a fixed structure for all course modules and decided on types of assignments that were to be used. Six cases were created for these assignments (see box 1). Four of these cases were based on prototypical MUS patients, according to a focus group study amongst Dutch GPs (case 1: the passive MUS patient, case 3: the anxious MUS patient, case 4: the distressed MUS patient, and case 5: the unhappy MUS patient) (19).

Box 1. Cases, used in assignments throughout the course.

Case 1

41-year-old single mother of two visits her GP, because she is increasingly bothered by gastrointestinal complaints. She was diagnosed with IBS ten years ago, which runs in her family. The symptoms had been manageable for years, but recently she has been frequently experiencing diarrhea, flatulence, bloating, and fatigue. The patient feels very ashamed of these symptoms. She has no idea why the symptoms have worsened and does not know what to do about it.

Case 2

Since she has had the flue six months ago, a 19-year-old psychology student has been experiencing ongoing fatigue, headache, neck pain, and trouble concentrating. She regularly takes naps during the day, because she cannot stay awake. She is no longer able to play handball or study. She worries that her symptoms will not go away.

Box 1 (continued). Cases, used in assignments throughout the course.

Case 3
A 43-year-old IT-specialist visits his GP, because he has been experiencing chest pains and palpitations for two weeks. Five months ago, he visited the emergency department with acute chest pain, which was classified as 'atypical', non-cardiac chest pain. The patient and his wife are very worried and insist they would like to be referred to a cardiologist. Two years ago, a friend died of a heart attack and the patient fears this might happen to him as well.

Case 4
Four months ago, a 32-year-old lawyer suffered from sudden and severe vertigo, nausea and vomiting. She was diagnosed with vestibular neuritis. The patient now visits her GP, because she keeps feeling dizzy and unsteady. She is also very tired and sometimes feels like she is 'not quite there'. The patient feels stressed out, because the symptoms interfere with her demanding job.

Case 5
A 51-year-old man with type 2 diabetes has been suffering from generalized, chronic pain for three years. A rheumatologist could not find a medical explanation for the symptoms. The patient now visits his GP, because the pain in his hands and knees have increased. This has led him to cease his hobbies: fishing and playing cards with friends. The patient seems down. There is not much he enjoys in life.

Case 6
A 46-year-old teacher with medically unexplained headaches and tinnitus, was referred to a psychiatrist. Prior to this, he visited a bioresonance therapist, who suggested he might be hypersensitive to electromagnetic radiation. The patient has read a lot about this on the internet and he recognizes many of the symptoms. He also realized his symptoms started after a transmission tower was placed near his house.

Then, all of the individual assignments were drafted, which included filming of interviews with experienced clinicians, recording 'screencasts' (2-3 minute explanatory videos), and filming re-enacted consultations with actors. The stakeholders were asked to give feedback on this first version of the course. Finally, a pilot was organized with 64 experienced GPs. Divided into two groups, they completed 3 course modules (1, 3, and 5 or 2, 4, and 6). Afterwards, structured focus group discussions were organized to gather qualitative feedback in order to fine-tune the course in terms of form (structure, length of the modules, teaching methods) and content (topics, relevancy, level). The course was developed and piloted in the Dutch language and subsequently translated into English and German.

Course Structure and Content

The aim of the course was to teach healthcare providers how to diagnose and treat MUS in a patient-centered manner. In order to facilitate collaboration and communication between different types of healthcare providers, the course was designed for all healthcare providers, involved in the care of patients with MUS, for example: general practitioners (GPs), medical specialists (internists, gastroenterologists, rheumatologists, gynecologists, neurologists, psychiatrists, rehabilitation specialists, and occupational physicians), physiotherapists, nurses, psychologists and other mental healthcare workers.

FutureLearn, a digital education platform (www.futurelearn.com), which offers courses from many international universities, was used to host the course. The course consisted of seven modules (see table 1) with a duration of approximately 45 to 60 minutes. Module 6 was designed specifically for mental healthcare providers. Each module had the exact same structure. It started with the learning goals of the module, followed by 6 to 15 short assignments (videos, discussion boards, reading assignments, polls, and quizzes). All modules ended with a take-home-message, an evaluative survey and a 'further reading' segment.

Participants

For the pilot study, we recruited participants in two ways. First, the online course was implemented in the residency training of medical residents from various specialties in the University Medical Centers of Groningen and Amsterdam, the Netherlands. Prior to a workshop on communication in the context of MUS, residents were instructed to complete three course modules of their choice, based on their prior knowledge of and experience with MUS. Second, the course was offered to various groups of Dutch healthcare providers as continuing vocational training for €100. In the Netherlands, registered healthcare providers are obliged to take a certain amount of accredited courses. Our course was accredited for general practitioners, medical specialists, physiotherapists, nurses, and psychologists. In order to recruit participants for this group, we promoted the course through a website (www.elearningsolk.nl), social media (twitter, LinkedIn), short articles in Dutch medical journals, and local/national meetings for healthcare providers. In order to be awarded accreditation points, these healthcare providers had to finish all of the course modules. For this pilot study, participants were recruited between September 2017 and January 2019.

Table 1. Learning goals per course module with relevant CanMEDS competencies.

	Module	Learning Goals *After following this module, the participant will:*	CanMEDS competency [a] a	b	c	d	e	f	g
1	Introduction	• Be more aware of their attitude towards patients with MUS • Have gained insight into 10 common misconceptions about MUS	.	.	.	.	.	.	√
2	Basic Knowledge	• Have gained basic knowledge on the terminology, prevalence, prognosis and etiology of MUS	√	.	.	.	.	√	√
3	Assessment	• Be able to make informed decisions on diagnostic testing, avoiding unnecessary procedures • Know how to minimize the chance of misdiagnosis • Be able to recognize and explore the 5 symptom dimensions (physical, cognitive, emotional, behavioral, and social) • Be able to recognize psychiatric comorbidity	√	.	.	.	√	√	.
4	Consultation	• Be able to recognize signs that a patient feels unheard • Know how to use physical examination to effectively reassure a patient • Be able to explain the working diagnosis 'MUS' to a patient • Be able to recognize and prevent a common negative interaction pattern	√	√	.	.	√	.	√
5	Treatment in Primary Care	• Be able to assess the severity of MUS • Know methods to motivate patients for behaviour change • Be able to set treatment goals together with a patient and monitor progress	√	√	√	√	.	.	.
6	Psychological Treatment [b]	• Know DSM-5 classifications of somatic symptom and related disorders • Be able to cope with disagreements with patients about symptom explanations • Know how to adequately confront patients with suspected factitious disorder • Be able to compose a personalized explanation and treatment plan	√	√	.	.	.	.	.
7	Collaboration	• Know how to improve communication and collaboration with other health care providers • Know which are key elements in a good (referral) letter • Know when and how to refer a patient with MUS to mental healthcare	√	√	√	√	.	.	√

Note. [a] Canadian Medical Education Directives for Specialists (CanMEDS) is a framework, aimed to improve care by enhancing physician training, including the following competencies/roles (18) a: medical expert; b: communicator; c: collaborator; d: leader; e: health advocate; f: scholar; g: professional. [b] Access to module 6 was offered exclusively to mental healthcare providers.

Evaluation

Throughout the course, participants were asked to fill out custom designed, integrated online surveys. These surveys were offered 1) before the start of the course (i.e. before the first course module), 2) after each of the course modules, and 3) after finishing the course (i.e. after the final course module).

Participant Characteristics. The survey before the start of the course contained questions on participants' sex, age, profession, and clinical experience.

Self-reported Knowledge, Skills, and Attitude. The surveys before the start and after the end of the course contained general questions on participants' attitude towards and knowledge of MUS. The surveys at the end of the various course modules evaluated (improvements in) knowledge, skills, and attitude with regard to the specific themes of the module (i.e. whether learning goals were met). Items from all of these surveys were phrased as statements with a 5-point Likert scale (fully disagree/ disagree/ neither disagree, nor agree/ agree/ fully agree). For the variables assessing learning goals of the individual modules, responses 'agree' (4) and 'fully agree' (5) were combined.

Satisfaction. The evaluative survey at the end of the course assessed participants' satisfaction with the course. Participants were asked to grade the course on a scale from 1 to 10. In addition, they were asked whether they would recommend the course to a colleague and whether the course content was directly applicable in their daily practice. These items were phrased as statements with a 5-point Likert scale (fully disagree/ disagree/ neither disagree, nor agree/ agree/ fully agree). For these variables, responses 'agree' (4) and 'fully agree' (5) were combined.

RESULTS

Participant Characteristics

Before the start of the course, 119 participants filled out the general survey (see table 2). Most of these were GPs, physiotherapists, and mental healthcare providers (including residents and trainees). Years of clinical experience ranged from 0 to 44, with a peak at 3 and 4 years, representing the group of medical residents, and a median of 9 years.

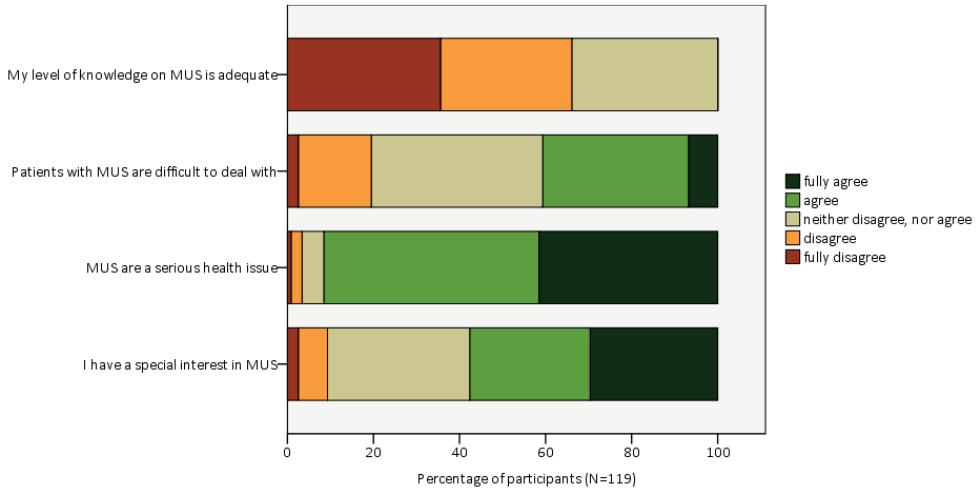
Table 2. General characteristics of course participants (N = 119).

Variable	
Male sex, n (%)	38 (32%)
Age in years, median (IQR)	41 (22)
Clinical experience in years, median (IQR)	9 (21)
Profession, including residents and trainees, n (%)	
General practitioner	20 (17%)
Physiotherapist	20 (17%)
Psychologist or other mental healthcare worker	17 (14%)
Internist, rheumatologist or gastroenterologist	5 (4%)
Psychiatrist	3 (3%)
Neurologist	1 (1%)
Rehabilitation specialist	1 (1%)
Other	10 (8%)
Unknown (not reported)	42 (35%)

Self-reported Knowledge, Skills, and Attitude

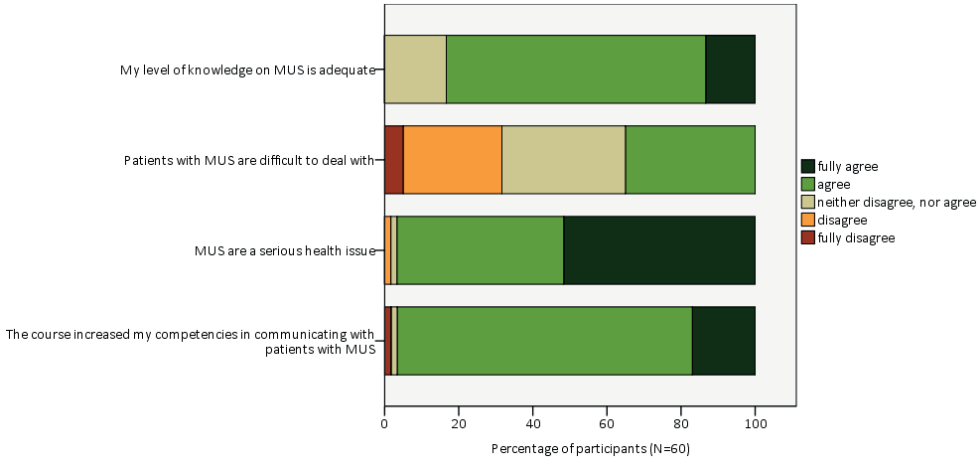
At the start of the course, none of the participants rated their level of knowledge on MUS as adequate (N = 119). In addition, 20% of participants indicated that they did *not* find patients with MUS difficult to deal with, 91% stated that they considered MUS a serious health problem, and 58% indicated they had a special interest in MUS (see figure 1).

Figure 1. Self-rated knowledge and attitude at the start of the course (N=119).



At the end of the course, 60 participants filled out the evaluative survey. After taking the course, 83% of participants rated their level of knowledge on MUS as adequate, and 97% felt that following the course increased their competencies in communicating with patients with MUS (see figure 2).

Figure 2. Self-rated knowledge, skills, and attitude at the end of the course (N = 60).



Participants generally rated their (improvements in) knowledge, skills, and attitude with regard to the specific learning goals of the seven modules as satisfactory (table 3). Exceptions were knowledge on referrals to mental healthcare and DSM-5 classifications of somatic symptom and related disorders.

Satisfaction

When asked to grade the course on a scale from 1 to 10, participants gave the course an overall mean (SD) score of 8.0 (0.7). Accordingly, 95% would recommend the course to a colleague and 93% found that what they had learned during the course could be directly applied in their daily practice (N=60).

Table 3. Self-rated knowledge, skills, and attitude after each of the course modules.

Variable	Module	%*	N
Increased awareness of attitude towards MUS	1	74%	144
Changed attitude towards MUS	1	26%	144
Knowledge on terminology adequate	2	81%	126
Knowledge on prevalence and prognosis adequate	2	78%	126
Knowledge on etiology adequate	2	84%	126
Increased awareness of consequences diagnostic procedures and referral	3	79%	101
Better able to recognize and explore symptom dimensions	3	72%	101
Improved ability to recognize when patient feels unheard	4	85%	81
Knows how to explain working diagnosis 'MUS' to patients	4	80%	81
Knows how to formulate treatment goals together with patients and how to monitor progress	5	77%	70
Knows how to motivate patients for behavior change	5	77%	70
Knowledge on DSM-5 classifications of somatic symptom and related disorders adequate	6	50%	18
Knows how to compose a personalized explanation and treatment plan according to the 'Consequences model' (20)	6	72%	18
Changed writing of letters about patients with MUS	7	80%	64
Knows when to refer a patient with MUS to mental healthcare	7	48%	64
Knows how to refer a patient with MUS to mental healthcare	7	63%	64

Note: *These items were measured on a 5-point Likert scale. For these variables, responses 'agree' (4) and 'fully agree' (5) were combined.

DISCUSSION

In this pilot study, we explored user experiences with an online, interprofessional course on MUS. According to healthcare providers, this course is an effective and satisfying way to improve their knowledge and skills regarding the diagnosis and treatment of MUS.

Our study confirms the findings of previous studies about the perspective of healthcare providers on patients with MUS and their ability to manage these patients. Our baseline survey shows that only 20% of participants did *not* find patients with MUS hard to deal with. This is in line with several previous studies, showing that physicians perceive patients with MUS as difficult, especially when they present with multiple symptoms (21, 22). In addition, none of our pilot study participants rated their knowledge on MUS as adequate before taking the course. A previous survey amongst physicians also shows that a substantial

proportion perceive themselves as insufficiently competent in managing patients with MUS (23). These findings highlight the need for education and training on MUS.

With regard to learning gains, participants generally rated their (improvements in) knowledge, skills, and attitude as satisfactory. Even though 74% indicated that the course had increased their awareness of their attitude towards MUS, only 26% reported that their attitude had actually changed. However, this need not be a problem. At the start of the course, 91% of participants stated that they considered MUS a serious health problem, which suggests that these participants might have already had the right attitude. Furthermore, a limited number of participants reported that they knew when (48%) and how (63%) to refer patients with MUS to mental healthcare. We therefore conclude this course topic needs revision and extra attention. Of the mental healthcare providers, merely 50% indicated that their knowledge on DSM-5 classifications with regard to somatic-symptom disorders was adequate. Although this might be seen as an indication that the course insufficiently addresses this topic, the DSM-5 was implemented in the Netherlands during the course of this pilot study. Thus, many healthcare providers were not trained to work with DSM-5 yet.

Participants who filled out the survey at the end of the course were extremely satisfied with the course. This is in line with previous studies on e-learning in medical and nonmedical fields, which have consistently demonstrated high satisfaction rates (24). Although we did not enquire appreciation for different aspects of the course (form, content, etc.), our findings indicate that e-learning is an appreciated form of education on the topic of MUS. This fits with a large body of literature pointing out the advantages of online learning, which include its flexibility, convenience, and self-controlled learning pace (16, 17, 25).

A strength of this study is the broad spectrum of healthcare providers, included in the study. The course was developed with the help of many relevant stakeholders (MUS experts, educations experts, healthcare providers from different fields, and a patient representative), in order to be suitable for a large variety of healthcare providers. The group of pilot study participants represents the full spectrum of healthcare providers from these different fields.

The most important limitation of the current study, is the occurrence of several types of bias. First, self-selection by healthcare providers probably led to a selection bias. At baseline, 58% of participants indicated they had a special interest in MUS. This affinity might have increased their appreciation of the course content. However, the pilot group partly consisted of medical residents. For these residents, the course was a standard part of their curriculum, so selection bias was not relevant in this portion of the study group. Secondly, attrition bias arose as a consequence of the manner of data collection. Participants were requested to (voluntarily) fill out several surveys, yet not all of them filled out all of the surveys. Unfortunately, log data on the numbers of participants who started and finished the various course modules were not available. However, large differences can be observed between the number of participants, who filled out the survey at the start of the course (N = 119), and the

number of participants, who filled out the survey at the end of the course (N = 60). Apart from creating a bias in study results, attrition is a more general issue in e-learning, which requires more motivation and self-discipline than traditional teaching methods, such as lectures or workshops (16). A final limitation of this study is the lack of standardized, validated instruments to assess satisfaction and learning gains.

The current study explored learning gains through self-assessment by healthcare providers. Because the course aimed to improve patient-centered care, it would be interesting to study patients' perspectives of their healthcare providers' communication skills and attitude in the future. Another way to gain a more objective impression of improvements in knowledge, skills, and attitude, would be to let observers rate consultations before and after healthcare providers have taken the course.

The development of the course and conduction of the pilot study took place in the Netherlands. Thereafter, the course was translated into English and German, which allows the course to be used, studied, and further developed internationally. In addition, we intend to develop extra course modules with specific themes, such as MUS in children, MUS in the elderly, and gender-sensitive care for MUS.

CONCLUSIONS

According to healthcare providers, this online, interprofessional course is an effective and satisfying way to learn about MUS. Observer- and, in particular, patient-rated outcomes are to be studied in the future.

FUNDING SOURCES

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PART I I

Development and effectiveness of self-help interventions.