Acceptance and commitment therapy meets peer-support. Development of a supportive self-care intervention for patients with rare diseases: a multistage development process

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ABSTRACT

Objective We aimed at developing a patient-centred self-help programme, tailored to the needs of patients with rare chronic diseases.

Design Multistage, multimethod development process including a survey with validated self-report scales and open-ended questions (phase 1) and focus groups (phase 2) for needs assessment and, consolidating the first phases and the literature, the intervention development (phase 3).

Setting Phase 1: nationwide online survey in Germany, phase 2: four separate and diagnostically homogeneous focus groups. The focus groups took place at a university medical centre in Germany.

Participants Target group were patients with rare diseases that occur at a prevalence <1:2000. Phase 1: n=300 participants with different rare diseases. Phase 2: Individuals with neurofibromatosis type 1 (n=4), primary sclerosing cholangitis (n=5), pulmonary arterial hypertension (n=4) and Marfan syndrome (n=5).

Results The central results of phases 1 and 2 were requests for more information about the disease and contact with other affected persons. Patients also expressed support needs in dealing with difficult emotions and identified acceptance of the disease as a turning point for quality of life. In phase 3, we identified acceptance and commitment therapy (ACT) as a suitable therapeutic approach and determined details about implementation and execution of self-management programmes. A 6-week self-help concept led by peer counsellors was developed, which includes disease-specific information and ACT-based exercises.

Conclusion Based on a multistage needs assessment, we developed a peer-guided self-help intervention for patients with rare chronic diseases. Combining self-management, peer-counselling and ACT may help living with a rare condition. Further research needs to test the programme’s efficacy.

Trial registration number ISRCTN13738704.

INTRODUCTION

There are around 7000 rare diseases worldwide (prevalence <1:2000), which differ greatly in their symptoms and course. In the face of finite healthcare resources, identifying commonalities in the experience and care needs can help to develop services for the entire group of patients that can improve their quality of life. Despite the heterogeneity, shared burdens can be assumed such as loss of control, reduced quality of life, lack of contact with other patients and often inadequate medical care.

Chronic conditions cause psychosocial stress. Self-management approaches have been developed to help patients build skills in managing the challenges of living with a chronic condition. Strengthening patients in dealing with the psychological impact of living with a chronic condition can help improve quality of life. In individuals affected by common chronic conditions, depressive symptoms have been associated with a poorer somatic outcome, longer hospital stays and...
increased morbidity and mortality. Consideration of the mental health of physically ill patients is therefore a possible starting point for interventions that improve the quality of life. As most rare diseases cannot be cured, psychological intervention can support the management of the disease and thus change the overall quality of life. This creates scope for action for practitioners and patients.

It is likely that the experiences of patients with rare disease resemble those of patients affected by more common chronic conditions. In addition to the burden of chronic disease, patients with rare chronic disease may face additional stress. One source of additional stress may be uncertainty about their condition since rare conditions are often less well understood. Another source of additional stress may be geographical distribution. Since only few patients share a rare diagnosis, patients often live far apart which creates a barrier to psychosocial peer-support, self-help offers and adequate treatment.

We assume that individuals affected by rare chronic diseases are subject to specific burden due to the low prevalence of each disease by definition. A study commissioned by the German Federal Ministry of Health, in which both practitioners and representatives of patient organisations were interviewed, concluded that the burdens specific to rare diseases lead to a significant impairment of quality of life. The authors reported that there is a severe shortage of care services, especially primary care in the specialist area, which results in long diagnostic paths. A lack of information in many areas is also mentioned. In particular, the study identifies gaps in the care system, but does not ask about the everyday experience of those affected. Affected persons are also not directly interviewed in this study. However, the special challenge and necessity of interviewing the target group is emphasised.

Even more than the diagnosis itself, the perception of the disease and how the disease is dealt with has an impact on the quality of life of patients with rare conditions. A review of previous qualitative studies in the field of rare diseases describes that those affected report a lack of information and the need for more control. The authors show that emotional reactions, evaluations of the situation and coping strategies in dealing with the disease influence the quality of life. The authors also emphasise that studies on individual rare diseases have so far predominated and that there is still little knowledge about the shared experiences of those affected. Thus, it is still not well understood what it means to live with a rare disease. Therefore, additional studies are needed to inform the development of a novel intervention for patients with different rare diseases.

The aim of the research project was to narrow the gap in care for patients with rare diseases by developing of a self-help intervention tailored to the patients’ needs. In this manuscript, we describe the systematic development of a short intervention to improve disease management in patients with rare diseases. Findings from a survey among patients with rare diseases and focus groups intending to inform the process are presented and discussed with respect to the content of the intervention.

Multistage development process
The first phase in the intervention planning involved assessing patients’ needs across diagnoses. In the second phase, we assessed burden, needs and coping strategies qualitatively in four specific rare diseases. The third phase aimed at developing the intervention based on the results of the pre-studies and targeted literature search addressing open questions for intervention development. Figure 1 shows our multistage development process.

Patient and public involvement
This study is part of the research project ‘patients for patients’ aiming to develop and evaluate a disease management program for patients with rare chronic diseases. We closely cooperate with a non-profit alliance (ACHSE e.V.) functioning as umbrella organisation for patient associations for rare diseases. ACHSE e.V. consulted the development, planning and implementation of the project by representing patients’ interests. Further, we closely cooperate with patient associations directly who supported our recruitment process and help disseminate our results on their websites and in the associations’ patient magazines.

Phase 1: survey for cross-disease quantitative and qualitative needs assessment
Aims
Which specific care needs can be addressed in order to contribute to the quality of life of patients despite chronic illness? Since hardly any data are available on the need for care of patients with different rare chronic diseases, we aimed at assessing the shared experiences of this patient group. Therefore, we investigated problems and support needs in patients with different rare chronic diseases.

Methods
In a cross-sectional online survey, we investigated the psychological burden and care needs in different areas of patients’ lives. We included adult patients with different rare chronic diseases. We used quantitative measures to assess depression (Patient Health Questionnaire (PHQ-9) and anxiety (Generalized Anxiety Disorder Scale-7 (GAD-7)) as well as different psychosocial and disease-related characteristics. We further assessed problems and support wishes qualitatively with open questions. Ethics approval was given by the independent ethics committee of the Hamburg Medical Chamber (Ärztekammer Hamburg) on 2 February 2016 (reference number PV5088). A detailed description of the methods and results is described elsewhere, please see online supplemental files for a complete list of survey instruments (online supplemental file 1 and patient flow online supplemental file 2).
Results
The study, which involved 300 patients with 79 different rare diseases, showed that patients with rare diseases are significantly more affected by depression and anxiety symptoms than the general population.14 Forty-two per cent of patients reported a clinically relevant depression burden with moderate to severe symptoms. For an anxiety disorder, this proportion was around 23%. The study further revealed that psychosocial aspects contributed better to explained variation in depression and anxiety compared with disease-related variables. In particular, cognitive appraisal processes seem to play a role in the development of depression. A detailed description of the results on depression and anxiety is published elsewhere.14

Our study further showed that patients with rare chronic diseases want more support in various areas of life than they currently experience and also clearly in comparison to a comparative sample of patients with cancer.15 The need refers for example to psychological support or assistance in everyday life. Moreover, patients stated the need for more information about the conditions. With regard to social support, a majority of the participants stated that they regularly had relieving conversations, in most cases with family members, partners and friends. Nevertheless, 59.9% of participants reported that they did not feel sufficiently supported socially.

Conclusions
The study results show high psychosocial burden on the patients as well as an increased and currently not sufficiently fulfilled need for support in different life areas including social support and information needs. We would like to stress five conclusions drawn from these results to inform the development of an intervention. First, the high psychopathological burden underlines the need for psychosocial support interventions. A second conclusion drawn from this study is that due to shared burden and experiences a generic intervention may be developed targeting patients with heterogeneous diagnoses. This is underlined by the fact that diagnosis-related variables did not contribute to explained variation in psychopathology, but psychosocial variables such as cognitive appraisal of the disease did. Thirdly, we conclude that targeting the perception of and attitudes towards a condition in the intervention can improve quality of life. These conclusions are further supported by the arguments of von der Lippe et al.2 A fourth conclusion pertains to the social context: an intervention may target the social relatedness of recipients in order to improve the perceived social support. In this regard, social support has been identified as an important protective factor against psychopathological symptoms in numerous studies with chronically physically ill patients.16

And finally, we conclude that a combination of generic and disease-specific elements seems most appropriate for the intervention. We assume that a generic intervention could help develop constructive attitudes towards the condition and fosters perceived social support. In contrast, the need for information can be best addressed specific to conditions.

Figure 1 Development process.
further explore the burden of these diseases as well as support needs and what patients perceived as helpful in dealing with the diseases, we ran focus groups with patients affected by these four different conditions. The aim of the qualitative study was to assess diagnosis-specific as well as shared problems and psychosocial support needs. This study further guided the selection of the modules and development of disease-specific information modules.

Methods
In four diagnostically homogeneous focus groups, we asked patients with neurofibromatosis type 1, primary sclerosing cholangitis, pulmonary arterial hypertension and Marfan syndrome about problems as well as coping strategies with their rare disease. We chose conditions being treated at the University Medical Center Hamburg-Eppendorf to facilitate recruiting in the face of low prevalence. We recruited adult patients with one of the four diagnoses via specialised outpatient clinics at the University Medical Center Hamburg-Eppendorf as well as patient organisations.

In all four focus groups, we used the same semi-structured interview guide containing the following questions: ‘Which aspects of the disease do you perceive as particularly burdensome? In what way does the disease impede your daily life? Which consequences does the disease have on your social life, your work or other areas of your life? What helps you deal with the burden of your rare chronic disease? What coping attempts have you already tried? What has helped and what has been less helpful? What else would you wish for?’ (see online supplementary file 3 for a translation of the interview guide). The discussions were recorded, transcribed verbally and analysed with qualitative content analysis.17 We inductively derived categories regarding named coping strategies and support wishes from all four transcripts. To this end, two team members (NU, Anne-Marie Waßmuth (AW)) inductively and independently built categories according to the study aim based on reoccurring themes in all four pseudonymised transcripts. The resulting category system was discussed and revised several times with a third researcher (MKD).

We identified superordinate themes and built main categories. Two independent team members deductively coded the four transcripts using the final category system. Two researchers (Laura Holz (LH), Johanna Dreyer (JD)) who participated neither in the focus groups nor in the development of the coding scheme, then independently coded the four transcripts using the final category system.

Results
We interviewed 18 patients with neurofibromatosis type 1 (n=4), primary sclerosing cholangitis (n=5), pulmonary arterial hypertension (n=4) or Marfan syndrome (n=5) in four diagnostically homogeneous focus groups. Regarding problems associated with the diseases, we identified five main categories: medical problems, psychological burden, problems with the healthcare system, constraints and interpersonal problems. While medical problems differed widely between the diagnostic groups, patients with the different conditions independently reported many common problems including psychological burden, constraints in professional, personal and daily life, stigmatisation and others lacking understanding. A detailed description of these results is published elsewhere.18

Among aspects that help coping with the conditions, we identified five domains: social support, health services and treatments, profession and finances, leisure activities and psychological coping. Patients named aiding coping strategies they were able to carry out themselves (ie, adjusting leisure activities to new needs) or pertained to their evaluation of the situation (ie, acceptance of disease). Further aspects pertained to the system the patient is situated in (ie, social support) including healthcare services (ie, competent healthcare professionals, access to adequate treatment). An overview over all identified aspects is shown in table 1. Table 2 displays support wishes.

Numbers represent the total number of mentions and are displayed for each diagnosis individually as well as for the total number of mentions across all focus groups. The column N diag. represents the number of diagnoses, in which patients mentioned the respective category, with four representing all groups included in the study. Grey cells represent categories, which were mentioned at least once in a diagnostic group.

Strategies and resources perceived as helpful
Participants of the study were asked what has helped them coping with their disease in the past. Patients named assis- tive aspects from five areas: social support, health services and treatments, leisure, work and finance, psycholog- ical coping. Table 1 shows an overview of all categories revealed by qualitative content analysis.

Social support
Social support was reported as helpful, both by significant others as well as other patients affected by the disease.

So I can point out this DCCV [patient organiza- tion] again. They’re doing a doctor-patient seminar. There’s a federal meeting once a year, right? And then you get together with a lot of people and there are also a lot of transplanted and with them you can also have a little exchange. So wonderful evenings.

Healthcare services and treatment
Patients named access to specific treatments, information and aspects of patient–physician communication to be helpful.

…I am a strong person and nevertheless at first, I cried and it was so good that I here [in the hospi- tal], the doctor has taken me in the arm, then came some sort of pastoral care. (…) so I practically arrived in the ambulance and somebody talked to me right away.—PAH

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Results: what is perceived as helpful</th>
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<tr>
<td></td>
<td>NF</td>
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<tr>
<td><strong>Social support</strong></td>
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<tr>
<td>Social/emotional/ psychological support</td>
<td>3</td>
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<tr>
<td>Exchange with other patients/ self-help groups</td>
<td>2</td>
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<tr>
<td><strong>Healthcare services and treatment</strong></td>
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<tr>
<td>Good patient–physicians relationship</td>
<td>3</td>
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<tr>
<td>Competent staff</td>
<td>5</td>
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<tr>
<td>Reachability of physicians</td>
<td>2</td>
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<tr>
<td>Good exchange between clinics</td>
<td>1</td>
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<tr>
<td>Surgeries</td>
<td>3</td>
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<tr>
<td>Medication</td>
<td>1</td>
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<tr>
<td>Psychotherapy</td>
<td>5</td>
</tr>
<tr>
<td>Specific treatment offers for the disease</td>
<td>1</td>
</tr>
<tr>
<td><strong>Profession and finances</strong></td>
<td></td>
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<tr>
<td>Consideration of patients’ needs in professional life</td>
<td>2</td>
</tr>
<tr>
<td>Financial security</td>
<td>1</td>
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<tr>
<td><strong>Leisure activities</strong></td>
<td></td>
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<tr>
<td>Massages</td>
<td>1</td>
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<tr>
<td>Positive activities</td>
<td>4</td>
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<tr>
<td>Sports/exercise</td>
<td>1</td>
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<td>Relaxation/meditation</td>
<td>3</td>
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<tr>
<td><strong>Psychological coping</strong></td>
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<td>Constructive attitudes</td>
<td>3</td>
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<tr>
<td>Acceptance</td>
<td>3</td>
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<tr>
<td>Adaptation of patients’ lifestyle to the disease</td>
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<tr>
<td>Perceived control/self-efficacy</td>
<td>5</td>
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<td>Reflection</td>
<td>3</td>
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<td>Distraction/repression</td>
<td>4</td>
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<tr>
<td>Concealing the disease</td>
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<tr>
<td>Knowledge about the disease</td>
<td>5</td>
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<tr>
<td>Spirituality</td>
<td>1</td>
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<tr>
<td>Structure in daily life</td>
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</tbody>
</table>

MFS, Marfan syndrome; NF, neurofibromatosis; PAH, pulmonary arterial hypertension; PSC, primary sclerosing cholangitis.

**Work and finances**

Consideration of patients’ needs and flexibility were named in all groups.

And then, with a new boss, I managed that I no longer have all shifts, because I noticed that sleeping doesn’t work out well at all, even though I only work 20 hours, and I put my studies on hold so that I can still finish them... —MFS

**Leisure activities**

Patients in all groups named leisure activities as a form of self care.

...what really helped me back then, that I actually remained active and sporty (...). That helped me to survive these years, so to speak.—PAH

**Psychological coping**

Acceptance, constructive attitudes and adaptation of a patients’ lifestyle to the disease were reported as helpful in all focus groups.

And to have this very goal in mind, because now I can shape my profession, my path, my goal, my future self. This has given me a lot of energy to control my illness. Somehow already a lot. For example the cortisone therapy at the beginning was totally great,
because I could say myself, now five up, now five down and I set the pace myself. That did me a lot of good.—PSC

Support wishes
Participants of the study were asked what type of support they wish for to help them cope with their disease in the future. Patients named assistive aspects from five areas: somatic care, psychological care, social support, information needs, support for relatives, reduction of somatic complaints and more functionality, assistance with formalities. Table 2 shows an overview of all categories revealed by qualitative content analysis.

Numbers represent the total number of mentions and are displayed for each diagnosis individually as well as for the total number of mentions across all focus groups. The column N diag. represents the number of diagnoses, in which patients mentioned the respective category, with 4 representing all groups included in the study. Grey cells represent categories, which were mentioned at least once in a diagnostic group.

Conclusion
With regard to problems as well as coping strategies, patients with different rare conditions named shared aspects in different domains. Medical problems were rather disease-specific, while there were many shared aspects among psychosocial aspects. With regard to support needs, patients also reported similar experiences across different conditions. At the same time, participants in all four focus groups wished for more information on their specific condition, replicating the finding from the survey-based assessment. This again highlights that combining disease-specific information modules with generic psychosocial elements may be most adequate for the planned intervention.

Regarding what helps to live with a rare chronic disease, patients named aspects from different domains: social support, health services and treatments, leisure, work and

Table 2  Results: support wishes

<table>
<thead>
<tr>
<th></th>
<th>NF</th>
<th>PSC</th>
<th>PAH</th>
<th>MFS</th>
<th>N total</th>
<th>N diag.</th>
</tr>
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<tbody>
<tr>
<td><strong>Somatic care</strong></td>
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<tr>
<td>Better professional competence</td>
<td>10</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>19</td>
<td>4</td>
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<tr>
<td>Better patient-physician interaction</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>19</td>
<td>4</td>
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<td>Better/earlier diagnosis of the disease</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>8</td>
<td>3</td>
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<tr>
<td>More involvement in the treatment</td>
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<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
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<tr>
<td>More support from cost units</td>
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<td>1</td>
<td>4</td>
<td></td>
<td>12</td>
<td>3</td>
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<td><strong>Psychological healthcare</strong></td>
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<tr>
<td>Facilitated access to psychotherapy</td>
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<td></td>
<td>1</td>
<td>6</td>
<td>2</td>
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<tr>
<td>More psychological support in the treatment process</td>
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<td></td>
<td>6</td>
<td>8</td>
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<tr>
<td>More social/emotional/ psychological support</td>
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<td>7</td>
<td>1</td>
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<td>Exchange with other patients/ self-help groups</td>
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<td>More self-confidence</td>
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<td>2</td>
<td>4</td>
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<td><strong>Better information and easier availability of information...</strong></td>
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<td></td>
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<tr>
<td>...through more research</td>
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<td><strong>Support for relatives</strong></td>
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<td>Support for relatives</td>
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<td></td>
<td>1</td>
<td>3</td>
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<tr>
<td><strong>Reduction of somatic complaints and more functionality</strong></td>
<td>2</td>
<td>10</td>
<td>1</td>
<td>13</td>
<td>3</td>
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<tr>
<td>Freedom from symptoms / more functionality</td>
<td>2</td>
<td></td>
<td>10</td>
<td>1</td>
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<tr>
<td><strong>Assistance with formalities</strong></td>
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<tr>
<td>Legal assistance</td>
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<td>Support with everyday formalities</td>
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</table>

MFS, Marfan syndrome; NF, neurofibromatosis; PAH, pulmonary arterial hypertension; PSC, primary sclerosing cholangitis.
finance, psychological coping. The aspects mentioned included coping strategies that patients could implement themselves (eg, adaptation of leisure activities to new needs), while other aspects related to external support (eg, social support, competent medical staff). This underlines our conclusions from the survey-based needs assessment, that both addressing attitudes towards the diseases and the need for social support may have the potential to improve patients’ quality of life. With regard to the attitudes towards the disease, patients across different conditions stated, that acceptance of the disease was a central process in adjusting to the disease and improving quality of life.

Some of the problems and support wishes patients named may be universal experiences of patients affected by chronic conditions, while other aspects could be specific to rare diseases. In conclusion, we decided to address aspects related to the rarity of the conditions in interventions, such as a lack of contact to peers with the same disease.

Phase 3: development of a psychosocial intervention

Aims

Based on the assessment in the first two phases, we identified acceptance and commitment therapy (ACT) as a therapeutic approach in addressing the needs. ACT aims at supporting meaningful activity despite distress. To that end, processes of ACT include acceptance (ie, the willingness to experience distressing events without attempts to control them), and values-based action (ie, engaging in actions aligning with personally meaningful goals). On the one hand this approach may promote the ‘acceptance’ patients described as central to disease adjustment in our focus groups; On the other hand this approach has been previously argued to suit the needs of patients affected by chronic conditions. To inform the development process, we reviewed literature on supportive care for patients with more common chronic conditions in self-management programmes. Further, we aimed at gathering information on how to best design a self-management intervention, that helps fostering constructive attitudes towards a disease (such as acceptance) and can be implemented transdiagnostically. We searched for details about implementation and execution of self-management programmes. Synthesising past and the presented research findings, we developed an intervention that facilitates peer-contact, provides information on the conditions and includes generic therapeutic modules fostering acceptance and commitment to meaningful goals.

Methods

In phase 3, we discussed the results of the first three phases in the core research team (MKD, NU and BL), with a group of clinicians and researchers in a research colloquium, with a group of experts in ACT for chronic conditions. In the development process, we built on the proven framework of self-management programmes and targeted the content to the needs of patients with rare chronic conditions. We handsearched for literature detailing delivery of self-management and ACT in general and for chronic conditions specifically. In order to address the need for social support and contact to peers with the same disease, we designed a programme, which can be delivered by a peer-counsellor. We developed a self-help manual including disease-specific as well as generic elements with information and exercises. We further developed consultation guidelines and a training concept for peer counsellors. The programme was designed for the same four rare diseases we included in the focus group study. Finally, we presented the concept and material of the intervention to a patient representative working for the German umbrella organisation of all rare disease patient organisations ACHSE e.V. who provided feedback on the intervention. When training the peer-counsellors we noted all feedback to any material, wording or exercise in the intervention and altered it in accordance with the patients’ preference.

Results

Self-management programmes

For chronic conditions, self-management interventions have been implemented to complement primary care. These interventions aim at maximising patients’ control over their health and thereby subjective quality of life. The interventions can focus on different contents including information on conditions, symptom management, psychological consequences and life style and combinations of them in multi-component programmes. Approaches targeting psychological consequences, life style, social support and communication are usually generic for different chronic conditions while components regarding information, medication and symptom management are disease-specific. The interventions are usually brief. Exemplary, the ‘Chronic Disease Self-Management Programme’ is a 7-week, small-group intervention attended by people with different chronic conditions. The programme is mostly delivered by peer instructors from a highly structured manual who receive training for the task. Self-management programmes provided by paraprofessionals or “lay counsellors” (ie, trained individuals who are not licensed mental health providers) have been shown as equally effective to those led by healthcare professionals. The benefit of peer support has been emphasised for hardly reached groups of patients. On the one hand, peer counsellors can effectively deliver the intervention. On the other hand, they share experiences with the participants and may also be able to satisfy the need for more social connection and support. Thereby peer-counselling may benefit both recipient and counsellor.

ACT as therapeutic approach

ACT is a treatment approach enabling a transdiagnostic application; therefore, it can be applied irrespec-

of specific psychopathology or diagnosis. This is
especially appropriate for a self-administered programme designed for a diverse group of patients. Rather than addressing specific psychiatric conditions, we chose ACT as it addresses the shared experiences and circumstances of patients with chronic conditions. In particular, by addressing acceptance as well as value orientation and commitment, ACT may foster the experience of meaning in patients’ every day life. A key process in ACT is psychological flexibility, which is considered a protective factor against psychopathology. Processes to increase psychological flexibility include, among other things, active and aware acceptance of events even though they are unpleasant (eg, experiencing symptoms caused by a chronic illness) as well as implementation of value-based behaviour. ACT as group and individual therapy has been applied in a wide range of chronic conditions such as diabetes, cardiac disease and multiple sclerosis, and can improve a variety of outcomes including quality of life, depression and psychopathology. Acceptance of adverse experiences seems to be a key mechanism of change and is associated with higher quality of life and well-being.

Framework of the intervention

The programme can be completed from home. Participants receive the self-help manual and work on one chapter per week for a period of 6 weeks. In addition, participants receive a phone-conversation with a qualified peer-counsellor per week in order to reflect on the specific chapter. Thereby, the 6-week intervention combines self-management and peer-counselling. The peer counsellors receive a 2-day training beforehand, in which they work through the manual themselves and receive information on counselling techniques. In the first training for peer-counsellors, we additionally asked them for feedback on all components of the programme and adapted the manuals accordingly. Changes involved mostly wording and examples given. To guide the telephone support, peer-counsellors further receive consulting guidelines that contain questions and additional information like example responses. They further receive supervision provided by a psychotherapist in order to receive support for their task.

Content of the intervention

The first chapter of the manual was designed specifically for each of the four diseases and contains information on the condition. Chapters 2–6 include generic modules with exercises based on ACT. See figure 2 for an overview of how the findings from prestudies were translated to design decisions.

Information module

The information module is the only disease-specific module. It contains a brief evidence-based description of the conditions derived from internet sources such as the National Institutes of Health (NIH) Genetic and Rare Diseases Information Center (https://rarediseases.info.nih.gov/). Moreover, during the focus groups, we collected questions of patients that they wished someone had explained to them in the past or in the present. We asked these questions to experts on the condition working at specialised outpatient clinics at the University Medical Center Hamburg-Eppendorf. Interviews with the experts were transcribed and given to the expert for proof. For each of the four conditions the first module consists of these general information and answers to questions raised by patients. Additionally, we provided information on how to identify a reliable source on the internet, based on WHO-recommendation.

ACT modules

Chapters 2–6 are generic and designed for all patients irrespective of condition. The second chapter addresses difficult emotions and how to deal with them. In the third chapter, patients are asked to differentiate between problems they can change and those they cannot and acceptance is introduced as a useful strategy for the latter. The forth chapter targets values by introducing the concept and engaging patients in extracting values of their own life, that is, what is really meaningful to them. The fifth chapter supports participants in formulating goals serving these values (value-based goals) and laying out a specific plan on how to address one chosen value-based goal. Finally, the last chapter contains reflecting on the whole program and writing a letter to patients’ future selves. In addition to the manual, participants receive weekly telephone support by a peer counsellor of maximum 30 min. During the phone calls, the recipients of the intervention are asked whether working on the current chapter worked and which difficulties arose. The recipients have the opportunity to ask questions regarding the content and process. Peer-counsellors are trained before the intervention starts. See figure 3 for an overview of framework and content of the intervention.

DISCUSSION AND CONCLUSION

General discussion

Patients with rare chronic diseases are exposed to psychosocial stress due to the course of their disease and difficult access to adequate care. The quantitative study we conducted in phase I underlines the high psychological support need that has been postulated by patient organisations. In phase 2, we performed a qualitative focus group study specifying the support needs by asking what kind of support patients wish for and what has helped in the past. Some of the named aspects (eg, contact to peers, earlier diagnosis, more information) are in line with perceived problems, which patients described in other studies. Moreover, these aspects may reflect specific characteristics of the rare disease community that has been outlined by other authors as well. These findings stress the need for targeted psychosocial support for the rare disease community. The overall aim of the research project was the patient-centred development of a self-help service
**Figure 2** Multistage development process. Overview of the results in the first two phases and the design process synthesing results and information from the literature. MFS, Marfan syndrome; NF, neurofibromatosis; PAH, pulmonary arterial hypertension; PSC, primary sclerosing cholangitis.
tailored to the patient’s needs. Synthesising past and the presented research findings, we developed an intervention that targets the needs of patients with rare diseases. In the development process, we build on the proven framework of self-management programmes. Based on the needs assessment, we designed a self-management manual that includes six modules on the following topics: Disease-specific information, dealing with negative emotions, accepting negative thoughts and emotions, values and value-based goals. We targeted the processes of acceptance and value-based action to facilitate following meaningful goals despite distress, which has been shown beneficial in the face of persisting symptoms like pain.

The newly developed intervention targets the individual level by supporting patients in their coping with the condition and reflecting the attitude towards it to help foster constructive attitudes. Additionally, the intervention targets the patients’ microsystem by introducing a peer counsellor as (temporary) part of the support system. Future research needs to investigate the effectiveness of this approach. While the intervention holds the potential to improve overall quality of life, other aspects of the patients’ ecosystem remain unaltered, that is, given parts of the healthcare system.

This project can be viewed as part of a growing body of research on the experiences of patients with rare chronic conditions and how these may be better addressed in care. Recurring themes are low quality of information available online and need for contact to patients with the same condition. Recent research indicates that companionship and emotional support (rather than informational support) are beneficial for patients with rare diseases. Based on their findings, the authors recommend that intervention research should promote more companionship and emotional support to improve the life satisfaction of patients affected by rare diseases. Peer support in a structured programme is one way to implement this recommendation. A major strength of this intervention is the patient-centred development and direct deduction from the self-reported wishes of the target group. The approach allows addressing needs of a hard to reach group of patients. Moreover, most parts of the intervention are generic and thus enable an implementation for different rare diseases, which is particularly beneficial in view of the high number of different rare diseases.

Figure 3 Overview of the intervention. ACT, acceptance and commitment therapy.
rare diseases. Peer counsellors can help address the wanted exchange with other patients affected by the same rare condition. They further contribute their individual disease specific knowledge. Along those lines, a support conference for a single rare disease, Moebius syndrome, increased perceived knowledge shown in a predesign–postdesign.39 Additionally, it may be an economically efficient approach in the face of finite healthcare resources. While the intervention may help improve overall quality of life by fostering constructive coping, it cannot replace psychotherapy or address specific psychiatric conditions. Some authors showed that counselling benefits the lay counsellors,40 however, it may also be challenging for the providers of the intervention and could evoke experiences of helplessness in the face of these challenges. Another limitation is that the development targets both shared needs as well as disease-specific information, limiting its generalisability to other rare diseases. Finally, the literature search we conducted in phase 3 was not conducted as systematic review and therefore does not present a comprehensive picture of the corresponding literature.

Conclusion
In chronic conditions, self-management approaches have the potential to strengthen the affected individuals as they become their own primary caregivers.4 The newly developed intervention adapts the proven framework of self-management programmes in chronic conditions to the care needs of patients with rare chronic conditions. While we present the development process of the intervention, we do not address whether the intervention is accepted, feasible and efficacious. This was subject of a randomised control trial and will be reported separately.

Practice implications
Combining self-management, peer-counselling and ACT may help living with a rare condition. Future research needs to investigate acceptance and effectiveness of the novel intervention prior to implementing it into general care.

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Contributors
All authors contributed to conception, design, acquisition, analysis or interpretation of this study. Further, all authors contributed to writing or editing the draft of the manuscript and approved to the final version. Finally, all authors agree to be accountable for all aspects of the work. MKO: conceptualisation, methodology, formal analysis, investigation, method, curation, writing-original draft, supervision, project administration, funding acquisition. NU: methodology, formal analysis, investigation, data curation, writing-original draft methodology and results of phase 2, writing-review and editing. BL: conceptualisation, resources, writing-review and editing, supervision, project administration, funding acquisition.

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Phase 1 survey instruments

The online questionnaire assessing the needs of patients with rare chronic diseases included the following questions or validated self-assessment tools:

- Basic sociodemographic variables (age, gender, education, occupation, etc.)
- Disease-specific variables (name of the rare disease, date of diagnosis, previous course, family history, visibility of symptoms, expected course, loss of function, sick leave, incapacity to work, etc.)
- Previous treatments (medical care and use of psychosocial support such as psychotherapy and self-help)
- Need for support in the following areas (1) emotion and coping, (2) health system and information, (3) life with physical symptoms, (4) treatment by practitioner and (5) sexuality (Supportive Care Needs Survey, SCNS-SF34).
- Illness perception regarding (1) time course, (2) consequences, (3) personal control, (4) treatment control, (5) coherence, (6) time course cyclical, (7) emotional representation (Illness Perception Questionnaire, IPQ-R, short form).
- Disease management through self-management in the following areas (1) health related activities, (2) active participation in life, (3) dealing with emotions (4) self-attention, (5) coping oriented attitude, (6) skills and techniques, (7) social integration and support, (8) communication with providers (Health Education Impact Questionnaire, HeiQ).
- Health related quality of life (Short Form Health Survey, SF-12)
- Somatic complaint severity (Patient Health Questionnaire, PHQ-15)
- Depression (Patient Health Questionnaire, PHQ-9)
- Anxiety (Generalized Anxiety Disorder Scale, GAD-7)
- In addition, a few open questions should be asked: “What problems do you face in dealing with your illness?”, “Have you already found ways to cope with these problems?”, “What has helped you?”, and, “If you could wish for any kind of support, which one would it be?”.

References:


Opened survey homepage (n = 790)

Excluded (n = 459)
- No consent (n = 237)
- No diagnosis indicated (n = 108)
- Completed less than 85% of survey (n = 114)

Completed survey, more than 85% (n = 331)

Excluded from analysis (n = 27)
- Not meeting inclusion criteria (n = 27)
  - No rare disease (n = 20)
  - Younger than 16 (n = 4)
  - Diagnosis not confirmed by physician (n = 3)

Analysed (n = 304)

*Supplementary file. Flow diagram online survey phase 1.*
Focus groups took place in German. We translated the interview guide to English. The interview started after each participant provided informed consent.

<table>
<thead>
<tr>
<th>Interview guide</th>
<th>comments</th>
</tr>
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<tbody>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td></td>
</tr>
<tr>
<td>Good afternoon and welcome to today's focus group discussion. My name is Miriam Depping and these are my colleagues Natalie Uhlenbusch and Anne-Marie Waßmuth. We are delighted that you are participating in this discussion group today. This group discussion is part of a research project carried out at the UKE, which focuses on psychosocial support for people with rare chronic diseases. The long-term goal of our research project is to develop an intervention to provide additional psychosocial support to people with rare chronic diseases. The aim of the group discussion is to find out what kind of support you would like to receive.</td>
<td>Introduction</td>
</tr>
</tbody>
</table>
We have invited you today as experts on living with your disease and would like to get to know your perspective.

We would first like to find out more about your situation
- with regard to your illness
- experience of potential burden
- what type of psychosocial support you may need

In the following, we would also like to present you with examples of building blocks from self-management programmes and ask you about your opinion in this regard.

Do you currently have any further questions?

We will moderate the discussion, but will not participate in its content.
I will mainly conduct the discussion with you, while Natalie Uhlenbusch will keep an eye on the time and, if necessary, point out points that have not yet been considered. Mrs Anne-Marie Waßmuth will take minutes.
To ensure that no information is lost, we will record the interview. If necessary, Mrs Uhlenbusch will check the machine in between to make sure that the recording does not stop.
Please switch your mobile phones to silent mode so that we are not disturbed. It is important for the recording and for the atmosphere of the conversation, that only one person speaks at a time.

But first of all, let's talk about the course of today's conversation: As you have already learned, participation is voluntary and you have the right to leave the conversation at any time without negative consequences. However, of course, we are interested in your opinion and would be pleased if you stay with us until the end. Everything that we discuss today is strictly confidential and the recordings will only be used for research purposes and will be stored in anonymous form.

There are no right or wrong answers, we are interested in your personal opinion and experiences. Feel free to express what you really think and feel.

Of course, you are allowed to contradict each other, respectfully.

The discussion will be free and questions will not be answered one after the other, please feel free to join in whenever you would like to say something.
As already mentioned, it would be good if only one person speaks at a time so that we don't miss anything in our recordings.

We have about 1.5 hours.

Last but not least, please help yourself to snacks and drinks at any time and the bathroom are located (...)

Do you have any questions about the process?

Then we would like to ask you to introduce yourself briefly with your First names and age.
You have when you were diagnosed and whether you have any other illnesses.

Imagine you could travel in time and meet yourself 10 years ago.
What would you like to tell yourself about your illness or how to deal with it?
MAIN PART

Part A: Introductory questions

A.1 Which aspects of your disease do you find particularly stressful?

A.2 How does the disease complicate your everyday life?

A.3 What impact does the disease have on your social life, your job or other areas of your life?

Part B: Need for support

B.1 What helps you to deal with the described stresses and strains?

B.2 What coping attempts have you already made?

B.3 What helped you? What was less helpful?

B.4 What type of support would you like to have in addition?

Introductory questions: How do patients perceive the disease and what burdens are associated with it

What kind of support do patients already receive? What is perceived as helpful and what not? What other kind of support is desired?
Part C: Examples of self-management modules

Self-management programs offer one way of improving disease management. These programs are worked on independently from home and, if necessary, are accompanied by trained advisors.

In the field of chronic diseases, programs of this kind have proven to be effective and helpful.

We would now like to talk to you about 2 modules from such programs.

C.1.2 How should such a program be designed so that you can benefit from it?
C.1 Drawing up an action plan

Module in which a personally important activity is selected and a plan to implement it is created.

C.1.1 Do you think this type of exercise is helpful with regard to your rare chronic disease?

C.2 Dealing with depression

Building block in which is about dealing with feelings of depression or defeat. To reflect on how to react personally and what can possibly help in dealing with low spirits.

C.2.1 Do you think this type of exercise is useful when dealing with your rare chronic disease?
CONCLUSION

We now have about 20/15 minutes to finish the conversation and we would like to thank you for all your suggestions.

We have now discussed many points that are important to you with regard to an intervention, intended to offer you psychosocial support. Looking back, which of these points would you judge to be particularly relevant?

Finally, which important aspects would you like to add?

Is there anything else we may have overlooked?

We would now like to thank you very much for your time and effort, for sharing your view and for and your valuable suggestions. If you have any questions or comments that you would like to share with us afterwards, please feel free to contact us.