Chapter 4

Process evaluation of an integrated, multidisciplinary intervention program for hand eczema

Published as:
van Gils RF, Groenewoud K, Boot CRL, Rustemeyer T, van Mechelen W, van der Valk PGM, Anema JR. Process evaluation of an integrated, multidisciplinary intervention program for hand eczema. Contact Dermatitis, 66, 254–263.

Abstract

Background

Over the last decade, few randomized controlled trials (RCTs) of high methodological quality have been carried out to evaluate the effectiveness of interventions for patients with hand eczema. Little to no attention has been paid to the feasibility of these interventions. This process evaluation was carried out to gain insight in the barriers and facilitators for implementation of an intervention for hand eczema. The aims of this process evaluation were to examine the feasibility, the satisfaction of the patients and the professionals with the integrated care program and the perceived barriers and facilitators on the use of the program.

Methods

Eligible for this study were patients with moderate to severe chronic hand eczema who completed the integrated care program. This program is an intervention provided by a multidisciplinary team, consisting of a dermatologist, a specialized nurse and a clinical occupational physician (COP). Data were collected from the patients and the health care professionals, by means of semi-structured telephone interviews, questionnaires and a patient tracking system. Implementation, satisfaction and expectations were investigated.

Results

93 patients completed the integrated care program. Compliance with the integrated care program was good. The results indicate good satisfaction of both patients and health care professionals with the integrated care program. However, with regard to the process and feasibility of the integrated care program there is room for improvement. The clinical occupational physician was only involved in a very limited number of cases, the protocol was not flexible and the intervention period was too compact. Most of the perceived barriers in the present study are on the organizational level.

Conclusion

Satisfaction with the integrated care program was high in both patients and health care professionals. The involvement of the COP in the treatment when indicated should be optimized. With the multidisciplinary approach and good communication as a basis for the program, and a more flexible protocol to avoid unnecessary consultations by the health care professionals, integrated care could be a useful treatment from a process evaluation perspective.

Introduction

Over the last decade, few randomized controlled trials (RCTs) of high methodological quality have been conducted to evaluate the effectiveness of interventions for patients with hand eczema[1]. In these studies, so far little to no attention has been paid to the process evaluations including the feasibility of the interventions. Besides the need for high quality RCTs to evaluate the effectiveness of interventions, it is also important to evaluate the implementation process and feasibility aspects of the intervention, since they address the issue of how easily an intervention can be implemented in practice and how well the intervention is received. A process evaluation may also give care providers and policy makers insight about the application of the findings of an intervention study to their own setting, population or country[2].

The present study describes a process evaluation of an integrated care program for patients with hand eczema. Patients were treated by a multidisciplinary team, consisting of a dermatologist, a specialized nurse and an occupational clinical physician, and treatment was coordinated by a care manager. The integrated care program aimed at optimal topical treatment, avoiding relevant contact factors at home and in the working environment as much as possible, and optimal compliance to proper skin care instruction. Details about the intervention have been published elsewhere[3].

The integrated care program is innovative, because it integrates clinical care and occupational care. The clinical occupational physician (COP) functions as a bridge between the outpatient clinic and the workplace. This concept is based on a successful integrated care program for sick-listed employees with chronic low back pain[4,5].

Based on the bio-psychosocial model[6], integrated care aims to achieve a behavioural change of the patient, by means of counselling using a cognitive-behavioural approach, as well as change of the work environment to improve sustainable health and work related outcomes. Thereby, the patients' coping with hand eczema improves and his self-management increases. The main aim of the program was to improve the patient's overall quality of life and to increase societal participation related to paid or unpaid work, in line with the WHO recommendations[7].

Before implementation of the program on a larger scale, it is important to identify the presence of barriers and facilitators at innovation-, professional- and context level, as defined by Grol and Grimshaw[8]. The complexity of the protocol and the high intensity of the intervention both for patients and professionals may have consequences for its feasibility. Also, the feasibility of involving the patients' workplace in the treatment is unknown.

For this reason, it is important to evaluate if every step of the protocol was carried out as planned and to investigate experiences of patients and health professionals involved.

The aims of this process evaluation were to examine (1) the feasibility, i.e. whether the integrated care program was implemented in an experimental setting as planned; (2) the satisfaction of the patients and the professionals with the integrated care program; and (3) the perceived barriers and facilitators on the use of the integrated care program.

Methods

This process evaluation was carried out alongside a randomized controlled trial (RCT) on the effectiveness of an integrated care program for patients with chronic hand eczema, the HAND-study[3]. The Medical Ethics Committees of the participating hospitals (the VU University Medical Center, Radboud University Medical Center, Groningen University Medical Center and Jeroen Bosch Medical Center) approved the study and all participants signed informed consent.

Population

Patients

All patients who were randomized into the intervention group and those who completed the 12 week intervention period were eligible for participation in the process evaluation. Eligible for the RCT were patients older than 16 years of age with moderate to severe chronic hand eczema (> 3 months), who visited a dermatologist of one of the participating hospitals. Also eligible for participation were patients with mild hand eczema who were on sick-leave from work, or who scored at least 4 points on a Visual Analogue Scale (VAS) for perceived burden of disease in the last three months before inclusion. Detailed information about the recruitment procedure has been published elsewhere[3].

Health care professionals

Three academic hospitals and two local hospitals participated in the study. In each academic hospital, professionals were instructed to form a multidisciplinary team, consisting of a care manager, a dermatologist, a specialized nurse / physician assistant, and a clinical occupational physician (COP). In the local hospitals only a specialized nurse was involved. This nurse joined the multidisciplinary team of one of the academic hospitals. All health care professionals involved agreed to participate in this study.

Intervention

Integrated care by the multidisciplinary team

The group of patients randomized to the integrated care for hand eczema in a specialized centre will receive coordinated care by a multidisciplinary team. The multidisciplinary team consists of a care manager (an in dermatology specialized physician assistant or nurse), a dermatologist, an occupational physician and a specialized nurse. All professionals will be

trained in the study protocol prior to the study, with a refresher course after a half year. The specific role of each member is described below.

1. The care manager: coordination and communication

The care manager coordinates the integrated care. He/she is responsible for communication of the treatment plan with the patient. In addition, the care manager is responsible for the communication with all stakeholders, in the hospital (dermato-allergologist, occupational physician) as well as the relevant stakeholders in primary care (the patient's general practitioner and if applicable occupational physician and occupational hygienist). The care manager will have an intermediary role between primary and secondary care.

2. Multidisciplinary team: discussion

All patients will be discussed weekly in the multidisciplinary team. The outcomes of this discussion will be the guideline for further treatment.

3. Dermatologist: clinical evaluation

The dermatologist will perform the clinical and allergo-dermatological evaluation. This includes thorough history taking (including relevant exposures), physical examination and allergy testing. In addition to the standard allergological testing, Intracutaneous test with a small series of aero-allergens and/or epicutaneous tests with the European baseline series [12], and a routine additional series as in usual care, series relevant for the situation of the patient at work and at home can be tested with dilution series and controls.

4. Specialized nurse: topical treatment and education

All patients will visit the specialized nurse after 1, 4, 8 and 12 weeks. Another visit after 2 weeks is optional (figure 2). An essential part of the visits is education and counselling of the patient in the compliance to topical treatment. Topical treatment will be standardized. The approach is stepwise and strictly protocol led. Depending on the status of the hand eczema (acute, sub-acute or chronic lesions) and the overall severity (investigator's global assessment, [9]) a topical treatment regimen will be selected and adjusted during follow-up visits if needed. Treatment consists of dermatocorticosteroids and emollients, if needed supplemented with calcineurin-inhibitors.

Another important part of the programme is education of the patient, in order to improve his understanding of the mechanics of eczema and the circumstances that influence the barrier function of the skin. Instruction and counselling will be given regarding work, hand washing and care procedures, the use of protection measures such as protective gloves in general and the use of cotton gloves worn underneath. If necessary, information will be provided by the specialized nurse also for colleagues.

5. Clinical occupational physician: information, instruction and workplace visit

The clinical occupational physician will be involved if hand eczema is work-related (occupational dermatitis or work-aggravated dermatitis), or when (potential) absenteeism as a result of hand eczema threatens (figure 2). Information will be gained about exposure to skin irritating circumstances and the use of protective measures. In addition to the standard allergo-dermatological testing (European baseline series and additional (occupational) series), material derived from the workplace can be tested. Workplace visits will be organised, if indicated, to gain relevant material for testing or information on work circumstances. The clinical occupational physician will also give advice about prevention and work procedures. If needed, provision of modified work will be organized in communication with the employer's supervisor. Contact with the employer's supervisor or occupational physician will take place if indicated.

Data collection

General data about the intervention group, such as the kind of dermatitis and the results of patch-testing were registered. The photographic guide was used to assess the severity and clinical status. Most important outcome variables for the RCT were HECSI and disease-specific quality of life. The effects of the intervention on those outcomes are described elsewhere[10]. The data for this process evaluation were collected from medical records, a web-based patient tracking system, and questionnaires and interviews completed by the patients and the health care professionals. The quantitative data from all patients were collected by questionnaires at baseline and at the 3-months follow up, and qualitative data by semi-structured interviews.

Questionnaire

Quantitative data were collected using the short version of the Patient Satisfaction with Occupational Health Services (PSOHQ) questionnaire[11].

Interviews

By means of purposeful sampling, a heterogenic sample of patients, with regard to age, gender, hospital and type of work to ensure an equal representation of those characteristics, was recruited for the interviews. Interviews were conducted until data saturation was reached. Qualitative data were collected from the professionals by semi-structured interviews. The semi-structured interviews were conducted through Skype software and recorded using Call Graph. Data on referrals and number of consults were extracted from the web-based tracking system and medical records. Table 1 shows which data were collected.

Table 1. Data collection.

	Medical records	web-based patient tracking system	Questionnaires	Semi-structured interview
Compliance to the protocol	X	X		
Patients satisfaction			X	X
Professionals satisfaction				X
Barriers and facilitators (patients + professionals)				X

X means data was substracted from the specific source: data about compliance with the protocol came from medical records and web-based tracking system, data about patient satisfaction came from questionnaires and semistructured interviews, etc.

Outcome measures

Implementation of the integrated care program according to the protocol

To determine whether the integrated care program was implemented according to the protocol, we evaluated the compliance to the protocol for each participant. The number and content of visits were registered using the web-based patient tracking system. Similarly, data were collected on involvement of the clinical occupational physician. When the clinical occupational physician was involved, details about workplace visits and /or contact with the patient's supervisor were documented in the web-based patient tracking system as well.

Satisfaction of the patients and the multidisciplinary team

Satisfaction of the patients regarding the integrated care program was asked for with the short version of the Patient Satisfaction with Occupational Health Services questionnaire[11], on a 5-point scale ranging from no agreement to full agreement. The patients invited for a semi-structured interview were asked in more detail about their satisfaction with the integrated care program.

Satisfaction of the multidisciplinary team with the protocol was investigated in the semi-structured interviews with all the participating professionals.

Barriers and facilitators on the integrated care program

To implement an intervention properly, it is important to be aware of the barriers and facilitators for the application of the intervention program. Therefore, the health care professionals were asked to give their opinion about the applicability of the integrated care program and perceived barriers and facilitators during the semi-structured interviews. Besides, they were asked to rate a specific list of items as perceived or not perceived barrier. As defined by Grol, barriers to change can act at different levels: innovation, professional, context and other actors[8].

Data analyses

The quantitative data were analyzed by means of descriptive statistics. Excel 2003 and SPSS version 15.0 were used for the descriptive and statistical analyses. For analyses of the qualitative data, all telephone interviews were transcribed verbatim. A qualitative software program (Atlas.ti version 5.2) was used to electronically code and analyse data.

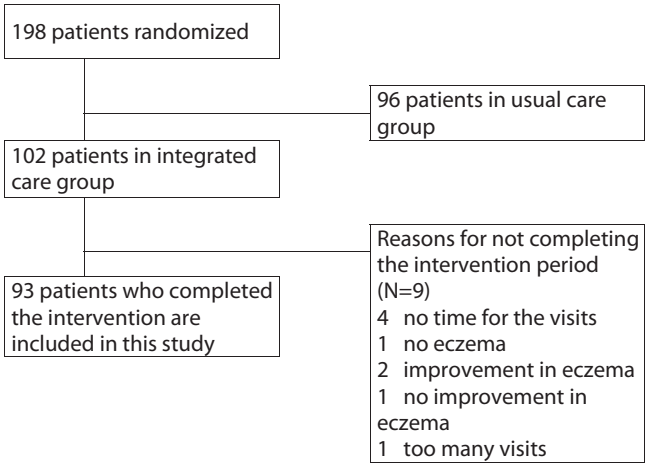
Results

Participation

Patients

Between July 2008 and December 2009, 102 patients were randomized in the integrated care program group. Of these, one did not start with the intervention at all, and eight patients did not complete the total intervention period of 12 weeks. Figure 1 shows the flow diagram of patients in the HAND-study, including reasons for not completing the intervention period. Main reasons for not starting or not completing the intervention program were: too much time to complete the intervention; and, perceiving no improvement of hand eczema. Finally, 93 patients completed the entire intervention and their data were used for this process evaluation. The baseline characteristics of those patients are shown in Table 2. The most common allergies were nickel (41.7%), rubber (16.7%) and acrylates (12.5%). Table 3 presents the HECSI score at baseline for the different characteristics for patients in the intervention group.

Figure 1. Flow diagram of patients in the HAND study, including reasons for not completing the intervention.



Health care professionals

Twelve health care professionals were involved in this study, and 11 took part in the telephone interview.

Table 2. Baseline characteristics of patients who completed the integrated care program.

Patient characteristics	**n**	**%**
Age in years (mean (sd))	41.5	13.7
Gender (male)	41	44.1
Married or cohabiting	56	62.2
Education- and work-related characteristics	**n**	**%**
Level of education		
- Low	23	25.6
- Intermediate	40	44.4
- High	27	30.0
Paid work	75	84.3
Hours per week (SD)	29.8	12.3
Risk profession and/ or activities	45	48.4
Hand eczema-related characteristics	**n**	**%**
Duration hand eczema in years (SD)	7.3	10.7
VAS (mean(SD))	7.3	2.0
Type of hand eczema		
- Dyshidrosis	49	60.5
- Hyperkeratotic	26	32.1
- Nummular	2	2.5
- Fingertip dermatitis	3	3.7
- Focal dyskeratosis	1	1.2
IGA		
- Clear	2	2.3
- Almost clear	17	19.3
- Moderate	41	46.6
- Severe	24	27.3
- Very severe	4	4.5
HECSI (mean(SD))	45.2	34.2
HEAS Left (mean(SD))	12.9	11.7
HEAS Right (mean(SD))	14.4	12.8

HEAS, Hand Eczema Area and Severity Score; HECSI, Hand Eczema Severity Index; IGA, Investigator's Global Assessment; SD, Standard deviation; VAS, Visual Analogue Scale. The number of available cases ranged from 74-93.

Table 3. Mean HECSI scores at baseline for the different baseline characteristics of patients who completed the integrated care program

Patient characteristics	Mean HECSI (sd)
Age	
- <average (until 43 years)	43.6 (36.2)
- >average (43 and older)	46.7 (32.4)
Gender	
- Male	45.4 (34.2)
- Female	45.0 (34.5)
Level of education	
- Low	58.6 (34.4)
- Intermediate	45.4 (36.4)
- High	31.9 (28.1)
Kind of eczema	
- Irritant	43.0 (32.1)
- Allergic	51.3 (39.6)
Type of hand eczema	
- Dyshidrosis	43.7 (34.2)
- Hyperkeratotic	50.1 (31.2)
- Nummular	8.5 (9.2)
- Fingertip dermatitis	42.7 (19.1)
- Focal dyskeratosis	7 (-)

Quantitative data

Implementation of the integrated care program according to the protocol

Table 4 shows the timeline of the different components of the integrated care program. For 14 patients no information was available in the web-based tracking system. For 5 other patients the information was only partly available. All patients were discussed for approximately 10 minutes in the multidisciplinary team meeting, which should be attended by at least one member of each discipline. Patients visited the specialized nurse / physician assistant on average 3.4 times (SD=0.70). The sessions in week 4 and week 12, which were in combination with a visit to the dermatologist, were carried out most often. Table 5 shows the reasons for cancelling a contact session with one of the professionals. When a visit of the patient to the specialized nurse / physician assistant was cancelled (in total 80 out of 377 times), this was most often because the patient had no time or perceived no need to visit. In few cases (6/80) the specialized nurse / physician assistant thought that the visit was not necessary for the patient.

In total, 29 patients had according to the protocol an indication to visit the clinical occupational physician (COP). Eighteen of them did visit the COP. Main reasons for not visiting the clinical occupational physician were that the patient had quit his/her job (n=4) or that the eczema was not perceived as work-related by the patient (n=3). Contact with the supervisor by the COP was indicated only for five cases and in four cases this contact took

place. In the case where there was no contact with the supervisor, the reason was unknown. There were no indications according to the protocol for the COP to visit a workplace of one of the patients.

Timeline of the program

Table 4 shows the timeline of the components of the program. The median time between the start of the integrated care program and the multidisciplinary team meeting was according to the protocol, and the first two visits to the specialized nurse were within the range of the protocol. The median time between the start of the intervention and the visit with the clinical occupational physician was 30.5 calendar days (interquartile range: 21.8-59.3 days) for the 18 patients who visited the clinical occupational physician, which is according to the protocol.

Table 4. Overview of the components of the integrated care program.

	Start after inclusion (days) according to		
	Sessions, n (%)	**Protocol (between)**	**Study (median, [IQR])**
Dermato-allergologic evaluation & Multidisciplinary team discussion			
Week 0 DAE & MTD	79 (100.0)	1 – 7	4.5 [0.0-11.3]
Specialized nurse / Physician assistant			
- **Week 1:** Visit SN	66 (84.6)	8 – 14	[6.0-19.0]
- **Week 2:** Visit SN (optional)	38 (49.4)	15 – 21	[12.0-29.8]
- **Week 4:** Visit SN + dermatologist	69 (93.2)	29 – 35	[26.5-40.0]
- **Week 8:** Visit SN	52 (70.3)	57 – 63	[54.0-63.0]
- **Week 12:** Visit SN + dermatologist	71 (95.9)	85 – 91	[82.0-91.0]
Clinical occupational physician: indication			
- **Week 0:** COP after MTD	24 (30.4)		
- **Week 1:** COP after visit SN	5 (4.0)		
- **Week 2:** COP after visit SN	0 (0.0)		
Visit COP	18 (69.2)	8 – 21	30.5 [21.8-59.3]
Indication contact with supervisor	5 (27.8)		
Contact supervisor	2 (40.0)		
Indication workplace visit	0 (0.0)		

DAE: Dermato-allergologic evaluation; MTD: Multidisciplinary team discussion; SN: Specialized nurse; COP: Clinical occupational physician. Available cases ranged from 5-79

Table 5. Reasons in case a contact session with one of the professionals was cancelled.

Reasons for not visiting the specialized nurse / physician assistant	**n**
Patient had no time/ could not leave from work	20
Patient thought it was not necessary	19
Patient was on vacation	5
Patient canceled by phone	6
Patient had no transport/ lived too far away	6
Patient had no improvement	3
Patient did not show up	3
SN thought it was not necessary	9
SN was on vacation	4
SN called the patient too late	3
SN replaced the session by a telephone consult	2
Unknown	1
Reasons for not visiting the clinical occupational physician	
Patient quit his/ her job	3
Eczema was not work related	2
Patient was already in contact with own supervisor	1
Patient had no time	1
Patient thought it was not necessary	1
Reasons for no contact with the patient his/ her supervisor	
COP had contact with the occupational physician of the patient	2
Occupational physician of the patient did not response to the COP	1

SN: Specialized nurse; COP: Clinical occupational physician

Satisfaction of the patients according to the PSOHQ

The response rate to the PSOHQ was 78.5% (n=72). The patients were very satisfied about the whole intervention program and rated this on average as 4.1 (sd=0.80) (n=72) on a 1-5 scale. Table 6 shows the mean scores on patient satisfaction about the visits to the specialized nurse / physician assistant and the clinical occupational physician.

Table 6. Outcomes of the Patient Satisfaction with Occupational Health Services questionnaire[26], about the visits to the specialized nurse / physician assistant and clinical occupational physician.

	Mean score (scale 1-5; 5 indicating maximum)			
	SN	**N**	**COP**	**N**
Being taken seriously as a patient during the last visit	4.5	73	4.0	20
Trust and confidentiality during the last visit	4.1	68	3.9	17
Comfort of and access to the last visit	4.2	73	4.3	20
Attitude towards Occupational Health Services in general	3.9	72	3.7	19

SN: Specialized nurse; COP: Clinical occupational physician

Qualitative data

Experiences, usefulness and satisfaction

Patients

Fifteen patients were interviewed. Many patients were satisfied with the integrated care program (13/15). The most positive points mentioned about the visits with the specialized nurse / physician assistant were advises about self-management of and coping with hand eczema, and the behavioral change achieved by the visits (12/15). According to most patients, the number of visits was good (9/15). Some of them mentioned it as a high number (3/15), but some also found this necessary to effectively integrate all the information given (3/15). Aspects mentioned for further improvement of the intervention program were more attention to the psychological burden of hand eczema (1/15), more attention to the cause of the eczema (n=1), and to eczema on other parts of the body (2/15).

Of the patients who had visited the clinical occupational physician (n=5), some were positive about this meeting (3/5), and other patients perceived no added value to their situation (2/5).

Professionals

Overall, all professionals (n=11) were satisfied with the process of the intervention. The multidisciplinary character of the intervention, in which every discipline contributes to the content of the intervention, was regarded to be the most important strength of the intervention (9/11). The direct lines of communication between all disciplines resulted in a good cooperation (7/11). Another positive point, mentioned by most of the specialized nurses / physician assistants (4/5), was that they had the opportunity to give sufficient time to the patient.

Almost all professionals (10/11) found the involvement of a COP in the treatment useful. Two of the three COPs had direct contact with the patient's supervisor when indicated; the other

COP only had contact with the patient's own occupational physician. All COPs (3/3) were positive about the contacts with people from the workplace.
None of the professionals found the web-based tracking system useful. Because entering privacy-sensitive information such as details on treatment was not allowed, the web-based tracking system was only used to keep track of the number and dates of visits. All medical information was kept in the patient's medical file.
Some aspects of the intervention protocol could be improved according to the professionals. First, the weekly multidisciplinary team evaluation of all patients was perceived as not necessary. Patients should be discussed only after a visit or when the personal situation had changed drastically (2/11). Second, the protocol was not perceived as flexible. Some patients may need more attention than the visits scheduled, while others were already helped with 2 or 3 visits (3/11). The protocol did not allow for that. Finally, the intervention period could be stretched over a longer period of time to obtain sustainable behavioral change (3/11).

Barriers and facilitators for implementation

All health care professionals were asked about perceived barriers and facilitators with regard to the implementation of the study protocol. The most important perceived facilitator that was positively related to the process of the care was the good internal communication. According to all members of the multidisciplinary team, integrated care provides a useful intervention for patients with hand eczema, because it combines the knowledge exchange about diagnostics and treatment from different perspectives.
At innovation level, the lack of flexibility of the program was perceived as a barrier by some of the members (4/11). With regard to other actors involved in the care management of the patients, the resistance of patients, patients' supervisors and other health care professionals was perceived as a barrier by about half of the multidisciplinary teams. On context level, some professionals (6/11) expect the high costs of the intervention to be a barrier for implementing integrated care on a broader scale. Some members (4/11) foresee problems with the lack of specific knowledge available in other hospitals to effectively implement the study protocol.
The rating of the specific perceived barriers according to the members of the multidisciplinary team is shown in table 7.

Table 7. Perceived barriers for implementation of the intervention by the members (N=11) of the 3 multidisciplinary teams

Level	Factor	No barrier perceived	Undecided	Barrier perceived
innovation	Scientific basis	8	3	0
	Flexibility	7	0	4
	Complexity	9	1	1
	Compatibility	10	1	0
	Time-investment	9	1	1
professional	Attitude	11	0	0
	Knowledge	9	2	0
	Perceived advantage	9	1	1
	Expertise	9	1	1
Other actors	Resistance of patients	5	0	6
	Resistance of supervisors/other Health care professionals	5 -	0 -	6 -

Discussion

The aims of this process evaluation were to examine (1) the feasibility, i.e. whether the integrated care program was implemented in an experimental setting as planned according to the protocol; (2) the satisfaction of the patients and the professionals with the integrated care program; and (3) the perceived barriers and facilitators on the use of the program.

The main results indicate good satisfaction of both patients and health care professionals with the integrated care program. The multidisciplinary approach and good communication are mentioned as positive, as well as the time available for patients. However, the process and feasibility of the protocol can be improved. The clinical occupational physician (COP) was not involved in all cases indicated to occupational care, the protocol was perceived as not flexible and the intervention period was perceived as too compact.

Comparison with other studies

To our knowledge, no other process evaluations have been performed studying the feasibility of and implementation of an intervention in the field of hand eczema. A cross-sectional study by Kütting et al.[13] showed that although barrier creams and moisturizers are highly recommended as effective means to prevent irritant contact dermatitis in Germany, the compliance to application was extremely low. This emphasizes the importance of performing a process evaluation before implementing a new intervention.

The implementation of an integrated care program has already been carried out in a study for patients with chronic low back pain[4]. In that study, the COP was responsible for the planning and coordination of the care and the communication with the other health care professionals. In the present study, this role was fulfilled by the specialized nurse / physician assistant. The reason for this is that only 29 out of 79 patients were indicated to visit the COP.

Of those indicated patients, only 69% actually visited the COP. This means that the COP was only involved in the treatment of 18 out of 79 patients. As a result, the vast majority of the care provided was in the outpatient clinic by the specialized nurse / physician assistant. Thus, occupational healthcare only comprised a relatively small part of the intervention, unlike in the low back pain study. Contact with the workers supervisor / occupational physician or visits to the workplace rarely took place. This implies a minor role of the COP within the multidisciplinary team compared to the low back pain study.

Whereas in the study of Lambeek et al. [4] only time-investment was perceived as a barrier for implementation, most of the perceived barriers in the present study are at the level of other actors. Health care professionals perceived resistance of patients and supervisors / other health care professionals as the main barrier, which could be explained by the high intensity, and lack of flexibility of the integrated care program. For implementation on a broader scale, these are aspects that should be carefully looked into. Giving the professionals the opportunity to adapt the program to patients needs, could lead to a higher cooperation and compliance of the patients.

Integrated care has proved to be significantly more effective than usual care on the clinical score HECSI after 26 weeks of follow-up[10]. The high patient satisfaction and good compliance with the integrated care program are likely to have contributed to the found results. This is supported by self-management of and coping with hand eczema and the behavioral change achieved being mentioned as the most positive aspects of integrated care by the patients.

Strengths and limitations of the study

One of the strengths of our study was that we evaluated the process and satisfaction from the perspective of both patients and health care professionals. Mixed methods were used: quantitative as well as qualitative data were collected.

There are also some methodological weaknesses in this study. Unfortunately, selection bias cannot be ruled out because the patients and health care professionals who participated might have been more motivated than the drop-outs or regular population. This can overestimate the satisfaction and feasibility.

Most of the specialized health care professionals in the participating hospitals have a lot of specific knowledge and expertise about hand eczema. This should be kept in mind when implementing the intervention in a different setting with less experienced health care professionals. This selection bias could result in overestimation of the satisfaction and feasibility.

Finally, data-collection using the web-based tracking system was incomplete. Missing data could have resulted in selection bias towards an overestimation of the feasibility when more complex cases were not included in the system.

Practical implications

Of the patients included in this study, only a relatively small proportion was indicated to visit the COP. As described in the design study [3], patients were indicated to visit the COP in case of work-related / occupational dermatitis or work-aggravated dermatitis, and / or in case of (potential) absenteeism, and / or when the patients' supervisor did not cooperate. For patients meeting one or more of those criteria, integrated care could be a useful treatment. For patients whose hand eczema is not work-related, clinical care and education and counselling on preventive measures by a specialized nurse could suffice.

To decrease unnecessary consultations as perceived by patients and professionals, more flexibility should be embedded in the intervention program, with more room for decision-making by the specialized nurse / physician assistant.

To overcome the lack of specific knowledge in other hospitals, special training courses to educate nurses / physician assistants and COPs in this specific knowledge and working with the protocol should be organized. To increase the applicability and usefulness of the web-based tracking system, it should be incorporated in the existing administrative systems.

Conclusion

Satisfaction with the integrated care program is high in both patients and health care professionals. The process of care and feasibility of the protocol can be improved. The involvement of the COP in the treatment when indicated should be optimized. With the multidisciplinary approach and good communication as a basis for the program, and the freedom of a more flexible application by the health care professionals, integrated care could be a useful treatment from a process evaluation perspective.

Competing interests

The author(s) declare that they have no competing interests.

Statement of authors

We confirm that all details of the patients have been omitted or in such a way that the patients cannot be identified through any of the descriptions.

Authors' contribution

RG was responsible for the general co-ordination of the study, carried out the data-collection and participated in writing the paper. KG carried out the data-collection and participated in writing the paper. CB was responsible for the general co-ordination of the study and participated in writing the paper. JA was involved in the development of the study design, was responsible for the general co-ordination of the study and participated in writing the paper. TR, WM and PV were involved in the development of the study design and contributed to writing the paper. All authors read and approved the final version of the manuscript.

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